

THE DOUBLE BIND AND THE DOUBLE BURDEN:

**IMPLICATIONS FOR THE PROFESSIONAL EDUCATION
AND PRACTICE OF INDIGENOUS ENVIRONMENTAL
HEALTH PRACTITIONERS**

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of the requirements for the degree of
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CERTIFICATE OF AUTHORSHIP / ORIGINALITY

I certify that this thesis has not previously been submitted for a degree, nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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LIST OF ACRONYMS

AACAP	Army/ATSIC Community Assistance Program
AHW	Aboriginal Health Worker
AIEH	Australian Institute of Environmental Health
ATSIC	Aboriginal and Torres Strait Islander Commission
CDHFS	Commonwealth Department of Health and Family Services
CH&AC	Commonwealth Health and Aged Care
CPE	Continuing Professional Education
EHNCC	Environmental Health Needs Coordinating Committee
EHO	Environmental Health Officers
EHW	Environmental Health Worker
ESL	English as a Second Language
GIS	Geographic Information Systems
HSC	Higher School Certificate
ICEH	Indigenous Communities Environmental Health
LSP	Local Sustainability Program
MPRC	Murdi Paaki Regional Council
NBEET	National Board of Employment, Education and Training
NEHF	National Environmental Health Forum
NEHS	National Environmental Health Strategy
NEHSSC	National Environmental Health Strategy Steering Committee
NIEHF	National Indigenous Environmental Health Forum
NPHP	National Public Health Partnership
NSW	New South Wales
OATSIH	Office of Aboriginal and Torres Strait Islander Health
OATSIS	Office of Aboriginal and Torres Strait Islander Services
PBL	Problem-based Learning
PHA	Public Health Association
PHU	Public Health Unit
RHSET	Rural Health Support, Education and Training Program,
RIMC	Regional Integrated Monitoring Centre, UWS
ROI	Record of Interview
TAFE	Technical and Further Education
TER	Tertiary Entrance Ranking
TPC	Tertiary Preparation Course
UWS	University of Western Sydney
VTC	Vocational Training Centre
WAHD	Western Australian Health Department
WHO	World Health Organisation

ABSTRACT

This thesis presents the findings of four years of research into the curriculum and workplace experiences of the first Indigenous cohort to undertake a professional education program in environmental health at the University of Western Sydney. The research explores the capacity of a university program, even with a nationally accredited distance education curriculum, to meet the needs of Indigenous participants. In particular, the research examines whether core problem-based learning subjects of the program adequately prepare Indigenous students to work effectively in their complex and power-laden professional settings.

The findings have identified the ways in which a Western-based professional education and training program, even with the best of intentions, present a double bind and a double burden to its Indigenous participants. Students are asked to take part in a strong professional acculturation program without losing the very ties which would make them effective in their own cultural tradition. Thus, they are asked to accept the program for themselves, and at the same time to question and re-interpret the program for their own culture. Resolving this double bind brings with it a double burden: satisfying the curriculum demands of a mainstream degree, as they work to improve the environmental health conditions of their communities where mainstream services have failed.

The findings of this research suggest that a wider educational framework is needed for the education and training of Indigenous environmental health participants. Easing the bind and burden of participants requires a shift in thinking and in action, both within the University curriculum and among the environmental health profession.

In the University curriculum, the shift will require a reconceptualisation of problem-based learning and a change in pedagogy to incorporate *critical* and *strategic* perspectives. A future curriculum of this kind would be interested in action and review of field relevant issues, placing the problems and practice of Indigenous environmental health practitioners at the heart of the learning in core subjects.

The challenge presented to the environmental health profession is to take meaningful steps to support Indigenous practitioners in their work. In order for this to occur, non-Indigenous professionals will need to: over-come their fear of working openly with Indigenous colleagues; give professional space to their Indigenous counterparts so that their work in community can trial new ways of acting; share power and take steps to re-dress past power imbalances; learn from, as well as teach, their Indigenous colleagues; value cultural diversity; and take active steps to influence policies, programs, other practitioners and politicians concerned with Indigenous environmental health throughout the country.

CHAPTER ONE - PROFESSIONAL EDUCATION FOR INDIGENOUS PRACTITIONERS: A PROBLEM OF BEST FIT

1.1 Background

The University of Western Sydney (UWS) has delivered a professional degree program in the field of environmental health since 1979. This three-year Bachelor of Applied Science (Environmental Health) degree was developed in the late 1970's following calls from the Health and Building Inspectorate of New South Wales for a professional qualification. In an attempt to address the wide and varied technical aspects of the profession and produce multi-disciplinary problem solvers, the course designers implemented a program containing six core problem-based learning subjects (Ireland, 1978) and up to thirty specialist, technical or applied electives. Core subjects in this degree program employ relatively few formal lectures. Subject descriptions of core subjects tend not to be characterised by detailed lists of content to cover, but rather by problem-solving processes.

In the mid 1980's, program staff developed distance learning packages so that environmental health officers with TAFE certificate and diploma level qualifications could articulate to a degree at the same time as remaining in full-time employment. By 1988 the entire degree program was available both on campus and through correspondence, and University of Western Sydney received industry recognition as the national provider of professional environmental health training by distance education. The distance learning program enabled University of Western Sydney to reach students from each of the States and Territories, giving it a market edge over other tertiary institutions throughout the country offering environmental health degrees.

In 1996 a field study of education, health and environmental services in urban, remote and rural New South Wales, Victoria and Northern Territory identified Indigenous environmental health officers as amongst the most urgently needed professionals for health in Aboriginal and Torres Strait Islander communities (Brown and Stephenson, 1997). There was unanimous agreement amongst Indigenous workers, environmental health practitioners and health department directors that professional training of

Indigenous practitioners in this field was necessary to meet the special needs of a population living with a third-world health profile (Brown, 1996 unpublished field report). At the time there were no Aboriginal and Torres Strait Islander professional environmental health practitioners in the country, although there was a core of Indigenous environmental health workers. Remote communities called for a program, which allowed students to study from where they lived and worked. Academic experience at University of Western Sydney suggested that they would need the support of professional mentors and access to a research capacity which would support them in investigating substantive issues in their own communities. It was also important that any program offered provided graduates with a recognised professional qualification which ensured that they had the opportunity to concentrate their learning on the special needs of their communities *and* gave them the access to employment anywhere in Australia.

For a number of reasons, Australia's Foundation Chair in Environmental Health, Professor Valerie A. Brown believed the University at which I work was in a position to meet these needs. Firstly, it was the only university in the country to provide a nationally accredited distance education undergraduate program in environmental health. Secondly, it was able to provide both technical and scientific subjects as well as professional practice subjects designed to develop teamwork, problem solving and self-directed learning (Stephenson, Powis and Williamson, 1994; and University of Western Sydney, 2000). Thirdly, teaching staff connected with the program had had more than a decade of experience with curriculum development and teaching in environmental health programs in developing countries in Asia and the Pacific, the success of which had led to the designation of the University by the World Health Organisation as a Collaborating Centre in Environmental Health Development (WHO Collaborating Centre, 1997). Fourthly, Professor Brown herself had previously provided leadership in the delivery and monitoring of this type of initiative (see Barnett and Brown, 1981). And finally, there existed a core of teaching and research staff at the University who were interested in expanding their prior experience in environmental health development work to the new and local purpose of environmental health capacity building for Indigenous Australians.

From the outset, the program designer felt strongly that it would be unrealistic to expect to arrive at an effective Indigenous workforce in environmental health without: (a) research into the type of professional practice required; and (b) active contributions from the learners who would be fulfilling this professional role for the first time (Brown and Stephenson, 1997). Professor Brown therefore sought Commonwealth funding to develop an Indigenous Communities' Environmental Health research program to explore the education and practice needs of Indigenous Australian environmental health professionals. Having successfully obtained four years of joint funding from the Aboriginal and Torres Strait Islander Commission (ATSIC) and the Commonwealth Office of Aboriginal and Torres Strait Islander Health (OATSIH), an additional grant from the Rural Health Support, Education and Training Program (RHSET), and support from a number of State and Territory Departments of Health, the University was able to identify Aboriginal and Torres Strait Islander students for entry into its existing Bachelor of Applied Science (Environmental Health).

In 1997, the Indigenous Communities' Environmental Health Research and Development Program was launched by the then Minister of Aboriginal and Torres Strait Islander Affairs, Senator Dr. John Herron. Eight Indigenous students enrolled in the first year of the program. Over the period of this research, a total of 41 Aboriginal and Torres Strait Islander students from 30 locations across four States and two Territories enrolled in the degree program (Figure 1).

This chapter gives a detailed account of the academic background and employment pathways of Indigenous learners into the University of Western Sydney degree. It sets out the research problem under investigation and puts forward an hypothesis and a series of research questions. It explains the significance of this research, not just for program staff and students of the University of Western Sydney program, but more broadly for other fields of Indigenous education and other professional education programs using problem-based learning.

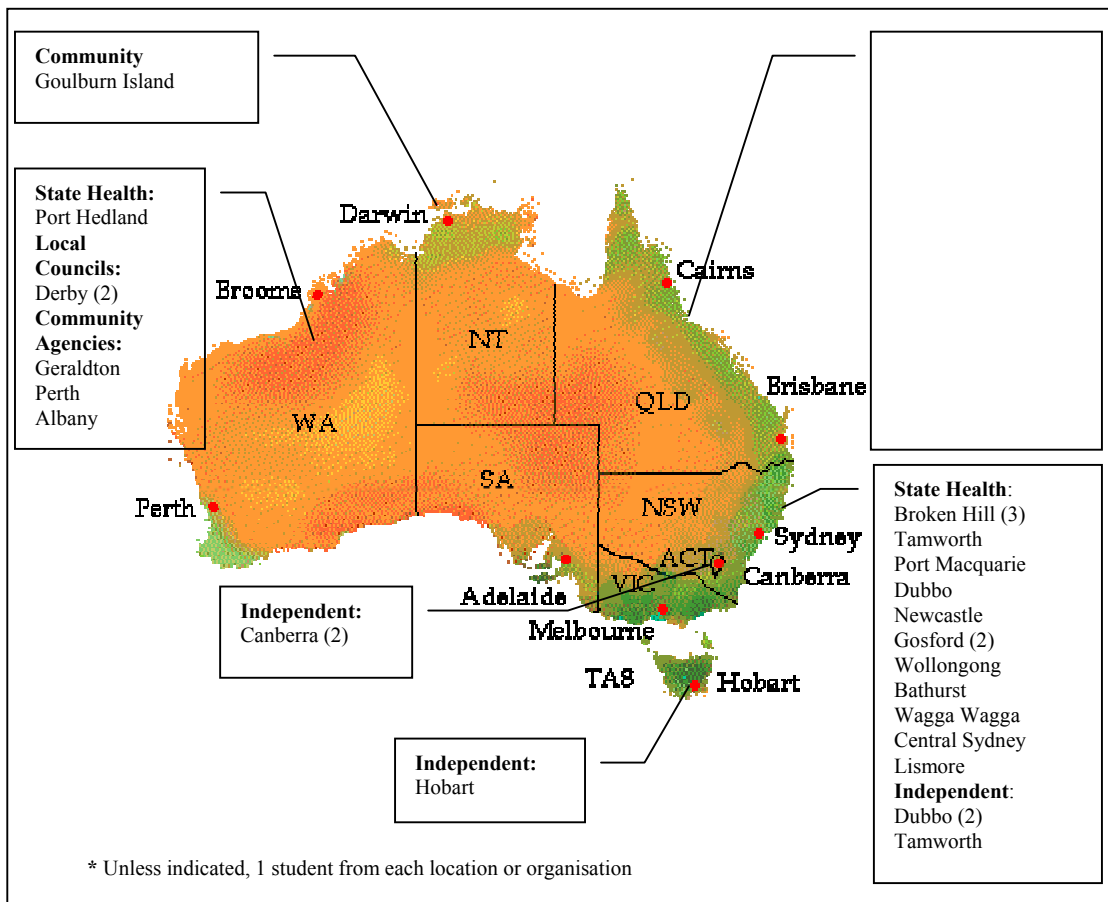


Figure 1: Geographical distribution of students*

1.2 The First Indigenous Cohort

Entry Pathway and Educational Background of Learners

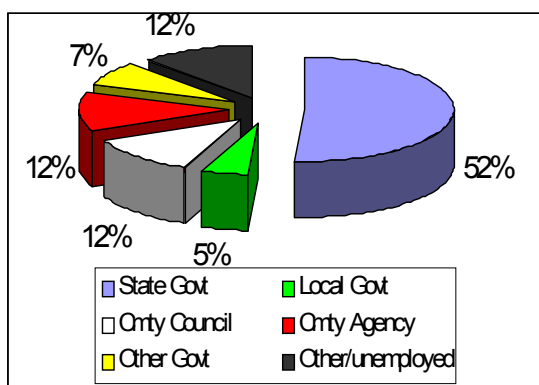


Figure 2: Student employment upon course entry

A matrix of the education and work backgrounds of Indigenous participants is presented in Appendix 1. Entry pathways and educational backgrounds varied across the Indigenous cohort, as did the settings and nature of practice of individuals in the group. Figure 2 represents the pathway of entry for the 41 students involved in this research.

More than half (21) worked in State government health agencies, two others held training positions in town councils, and a further five worked for their home community councils and with non-government community service agencies. Three of the remaining eight worked in health and environment positions in government but not immediately within environmental health departments, and five did not work in full time paid employment. Across these varied work settings, three pathways of entry into the degree program were evident and included recruitment through the following channels. As illustrated in Figure 3, course participants come to the degree as either direct recruits (trainee environmental health officers), existing practitioners (community-based environmental health workers), or as students independent of the professional field of environmental health (career change or personal interest). The majority of Indigenous students over the period of research were therefore employed in positions directly related to their field of study, with only a few students coming to the degree independent of employment or their current professional position. A brief description of these three main entry routes follows.

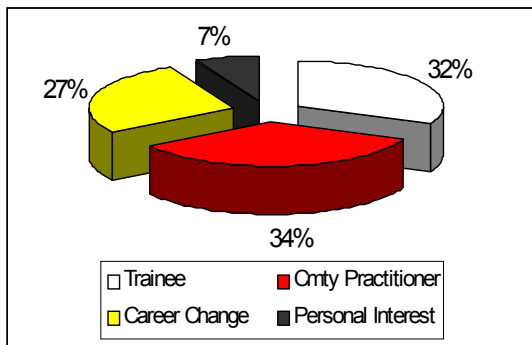


Figure 3: Entry pathway to course

As illustrated in Figure 3, course participants come to the degree as either direct recruits (trainee environmental health officers), existing practitioners (community-based environmental health workers), or as students independent of the professional field of environmental health (career change or personal interest). The majority of Indigenous students over the period of research were therefore employed in positions directly related to their field of study, with only a few students coming to the degree independent of employment or their current professional position. A brief description of these three main entry routes follows.

A. Trainee Environmental Health Officers

The primary pathway for Indigenous learners into the University of Western Sydney degree was through direct recruitment into the profession as a trainee environmental health officer. Throughout the period of this research this type of recruitment was the dominant mode in New South Wales where community-based environmental health worker training courses were not available.

As one strategy to help meet its 2% Aboriginal employment target the New South Wales Health Department identified the field of environmental health as a key professional area for Indigenous employment (NSW Health Department, 1998). In its Aboriginal Health Strategic Plan (NSW Health Department, 1999), the Department noted the important role Indigenous environmental health officers could play in helping

to meet its objective of improving the quality of environmental health for rural and remote Aboriginal communities. In parallel with the University of Western Sydney program, NSW Health Department began a recruitment campaign in 1997 to attract young trainees with connections to local Aboriginal communities. Six trainees were placed across as many public health regions in that first year and additional placements have come on stream each year to date (2001). A typical job description offers a position within the Department on a temporary basis for a period of five or six years, comprising a part-time study component of four to five years followed upon course completion by one to two years full-time employment as a qualified environmental health officer. A condition of employment explicitly requires trainees to study and complete the University of Western Sydney Bachelor of Applied Science (Environmental Health) degree.

As candidates for these positions needed both a knowledge and understanding of Aboriginal communities and an interest in, and a commitment to, improving environmental health for the general Australian population, trainees were mostly drawn from their local region. However a local position was not always guaranteed, and in some instances, students were required by their sponsoring organisations to move to other regions to take up their training opportunity, the organisation thereby failing to satisfy one of the conditions requested by the original Indigenous advisers to the program.

It was unusual for workplace supervisors of this group of students to have had significant involvement in Indigenous environmental health prior to the arrival of the trainee. As will be explored in more detail in Chapter Five, a consequence of the existing professional training model meant that students were mostly trained in the workforce through mainstream examples of environmental health practice. Accordingly, professional exposure to Aboriginal environmental health issues for the initial trainee intakes was limited.

In terms of prior academic experience, this group of professional trainees generally came to the degree in their early twenties with sound educational backgrounds. The University provided the Environmental Health Branch of NSW Health with entry

criteria information, leaving that agency responsible for recruiting suitably prepared students. Job advertisements and position descriptions called for applicants who could ‘meet the admission requirements for the Bachelor of Applied Science (Environmental Health) at University of Western Sydney’. While not participating in the recruitment process, the University gave an assurance to State health that their nominations would be accepted into the degree course. Students generally met the minimum entry criteria, having achieved the requisite Tertiary Entrance Requirement (TER), including pass grades in Maths and a Science or the equivalent.

B. Indigenous Environmental Health Workers

A second pathway into the professional education program is through the technical practitioner route. Holders of a certificate or diploma from community-based Indigenous environmental health courses in the three northern States and Territory of Australia, enter the degree program as the next phase of their professional studies. These students are all practitioners in community environmental health and have experience working alongside other environmental health professionals in State and Territory health agencies. Like other resident health workers (see Williams and Cadet-James, 2000, p.15) community-based environmental health workers witness first hand the gravity of health-related problems and infrastructure needs in their communities. They live this experience as a group who:

...are disadvantaged relative to other Australians with respect to a number of socioeconomic factors, and these disadvantages place them at greater risk of ill health and reduced wellbeing (McLennan and Madden, 1999, p. 2).

Until fairly recently though, the majority of mainstream environmental health professionals, particularly those practising in urban settings, could have been excused for not being aware of the existence and nature of the work of these Aboriginal and Torres Strait Islander environmental health workers. In 1997, at the start of the program, these workers totalled only a few hundred around the country and tended to work in remote communities well beyond the urban horizon. Today however, the number, profile and self-confidence of Indigenous environmental health workers in rural and remote mainland Australia and the Torres Strait Islands have increased. Mainstream environmental health professionals now work much more closely with

community-based practitioners in the rural and remote regions of northern and western Australia and are recognising the important role local Indigenous partners play in progressing environmental health projects in community settings.

Positions have also been established in some State government health departments for Indigenous practitioners to coordinate regional community environmental health activities, supporting the work of their community-based colleagues. The first two of these positions were established in the Pilbara region of Western Australia and in Far North Queensland, servicing the Northern Peninsula Area and the Torres Strait Islands. Both positions required regional coordinators to cover vast areas of land (and sea in the case of the latter) in their work supporting community-based practitioners. Community-based environmental health coordinators recruited by State health departments typically work alongside mainstream environmental health professionals but their practice focuses pre-dominantly, if not entirely, on issues impacting Indigenous communities. They are encouraged by State employers to further their training and to obtain full professional qualifications despite the fact that a degree in environmental health is not a requirement for these positions at this time.

Other course participants remain in their respective communities as environmental health workers while attempting the degree. Community-based students provide key services on the ground and either visit, or live in, communities. The nature of their work as community-based practitioners varies widely from one community to another and within each State and Territory. The type of service delivery is largely dependent on the needs and capabilities of the communities in each jurisdiction, and the nature and extent of support given by State health departments and local authorities. In Western Australia for example, Aboriginal environmental health workers provide basic maintenance services and/or advice and early identification of repair or maintenance requirements of community infrastructure (EHNCC, 1998); while in Queensland, the emphasis is more on problem identification, the management of repair teams, and community education (Heggie, 1997).

Unlike their New South Wales trainee counterparts, these students enter the degree as practitioners and bring with them considerable expertise and first hand experience

managing environmental health programs in Aboriginal and Torres Strait Islander communities. The focus of the initial training of environmental health workers (Heggie, 1997) and their practice (NEHF, 1998) is almost exclusively on environmental health issues impacting Indigenous communities, such as inadequate water supplies and infrastructure, rubbish disposal, vector control and cyclone safety. Interviews with incoming students indicate this group of practitioners join the degree program because they want the same professional recognition accorded others in the profession, and they believe it will give them greater credibility within their communities.

Training levels for community-based practitioner education have also increased over recent times with the establishment of environmental health worker training courses in Western Australia, Northern Territory and Queensland, each having been reviewed and redeveloped during the period encompassed by this research. As the nature and role of the work performed by community-based practitioners differs throughout the country, the emphasis within training programs varies to reflect the differences from State to State and, in the case of Western Australia, from region to region (Stephenson, 1999a, p. 6). A brief overview of each of the programs follows.

Western Australia

With the support of the Health Department of Western Australia and the Ministry of Education, Pundulmurra College in Port Hedland, established the first Certificate level course for environmental health workers in 1985. The program expanded into the Kimberley region in 1987 and then again in 1993 into the Geraldton Mid-West and the Eastern Goldfields health regions (Lewin and Jamrozik, 1993, p. 1). The Western Australian program remains a highly practical course with a strong focus on managing physical environment-health relationships. It is delivered in modules with each having an 'off-job' (college or field demonstration) phase, and an 'on-job' (community) phase (Office of Aboriginal Health, undated, p. 3). Off the job, students attend a training college or demonstration community to undertake modules such as dog management; pests and pesticides; water; sewerage; rubbish; personal, home and food hygiene; and appropriate technology. The 'on-job', or community phase is designed to determine whether workers are applying the skills and knowledge gained in the training modules to his or her home environment. Workers receive training and assessment visits from

course educators at least once between modules. In their home community, trainee workers are required to complete workbooks and satisfy a community-phase assessment checklist for each module of the course (Lewin and Jamrozik, 1993, p. 28).

The Office of Aboriginal Health within the Health Department of Western Australia continues to consult with community-based practitioners, trainers and training institutions, and regional public health units on possible upgrades to this Certificate program. As yet, no formalised articulation program has been put in place between the Western Australian worker course and the professional course at the University of Western Sydney. Students who come to the University with the Western Australia Aboriginal environmental health worker certificate are not offered academic credit for their certificate.

Northern Territory

The Batchelor Institute of Tertiary Indigenous Education developed its current formal training in environmental health in 1993. Clark (1999) and Standen (1998) however each trace the history of Aboriginal environmental health and hygiene work in northern Australian communities to earlier times.

...the first 'hygiene school for natives' commenced on 26 May 1952 at Bagot Aboriginal Reserve in Darwin. The senior health inspector, Lyle Tivendale and his colleague, Arthur Marsh, were the trainers. They appear to have followed their own program of lectures and demonstrations, which were more practically oriented than [the Chief Medical Officer's] original curriculum and probably more suited to the capabilities of the trainees themselves... The medical officers were involved too, presenting the anatomy and physiology lectures which [the Chief Medical Officer] had deemed a necessity as well as more complicated topics like the aetiology and control of leprosy, malaria and tuberculosis (Clark, 1999, p. 83).

This type of community training continued throughout the Northern Territory during the fifties and sixties before a hygiene worker training program was developed and centralised at the Vocational Training Centre (VTC) at Batchelor, a small town some 120kms south of Darwin (Clark, 1999, p.116). According to Duke and Sommerlad (1976, p. 67), 438 hygiene assistants and twenty-seven hygiene leading hands were accepted into the Centre's program between 1972 and 1974. But, as Clark has noted, broad ranging organisational, administrative and policy changes in government, coupled

with the enormous diversion of funds and manpower following the devastation of Cyclone Tracy (Christmas eve, 1974), interrupted environmental health work and training for Aboriginal communities for many years (Clark, 1999, p. 115). Sporadic and informal training programs began again in various forms and in different regions of the Territory in the late 1970s and early 1980s. In the eight years between 1985 and 1993, community-based hygiene workers, under supervision and support of Territory environmental health officers, conducted much of the basic environmental health duties in community, including rubbish collection, grass cutting, and the cleaning and maintenance of toilets (Standen, 1998, p. 23).

The current day certificate-level environmental health training at Batchelor extends the community practitioners' role beyond one of focusing on the basic management of physical environment-health relationships, to one that includes elements of health promotion and community management (Brown and Stephenson, 1997). The Certificate III in Health Studies (Aboriginal Environmental Health) contains 10 modules - Foundations, Hygiene, Rubbish and Landcare, Water Management, Pests and Domestic Animals, Housing, First Aid, Health Promotion, Aboriginal Health Issues, and Basic Administration (Batchelor College, 1998). Similar to the Western Australia model, the course follows flexible delivery principles. Mixed modes, including block workshops, work in the community, community assignments and on-site visits have been adopted and components of the course may be delivered on campus, at annexes, or in a community. Also, as with the Western Australian Certificate program, no academic credit is awarded to Certificate holders upon entry into the University of Western Sydney degree.

In 1999, Batchelor Institute reviewed and expanded its offering for environmental health worker training. The original Certificate now articulates students into a newly developed Diploma in Primary Health Care (Environmental Health). This, in turn, leads students into an Advanced Diploma in Primary Health Care (Environmental Health). Core modules run through the 3 years of the Diploma and Advanced Diploma and consist of Communication and Management modules, Primary Health Care including Epidemiology, Health Promotion and Education modules, and a Science strand that includes biology, pharmacology, microbiology and biochemistry. The

Environmental Health strand includes units on water and waste water, pest control, legislation, solid and hazardous waste, appropriate technology, ecology/landcare and food hygiene (Batchelor College, 1999). Students also undertake a major research project or a minor research project and a work placement in the final year of their Advanced Diploma. Negotiations are currently under way between University of Western Sydney and Batchelor to finalise an articulation arrangement for Advanced Diplomates to receive the first year of the degree course in academic credit.

Queensland

Cairns TAFE in Far North Queensland first offered a Certificate program in Aboriginal and Torres Strait Islander Primary Health Care (Environmental) in mid 1996. Students from the first intake were able to continue studying as the program developed into a Diploma and then into an Advanced Diploma in Primary Health Care (Environmental). The first graduates of the Advanced Diploma emerged in 1999. TAFE students had been able to attain each level through a 'block-release' study arrangement where students travel from their communities to Cairns every 4-6 weeks for a fortnight of on-campus lectures. One-on-one off campus training is also provided to each student at their community with remote area trainers from TAFE visiting the students between blocks (Williams and Cadet-James, 2000, p.11).

Graduates of this environmental health worker program have developed a combination of practical and management skills and knowledge with which to improve environmental health standards in their communities (Heggie, 1997, p. 21). The goal is to produce graduates who can bring about change and improvement through communication and negotiation with tradesmen and technicians on community, and other practitioners or employees of government departments off community (Stephenson, 1999b, p. 9). This requires a different approach to environmental health worker activities and study programs and goes beyond the development of technical skills for community practitioners to fix problems on their own. Although environmental health workers in Queensland do not possess the full legal powers of their professional counterparts in government, community workers are able to draw on local by-laws to carry out their functions. The community-based workers combine with

non-Indigenous professionals where regulatory responses are required to resolve particular problems.

An articulation arrangement between Cairns TAFE and University of Western Sydney has been in place since 1999. It enables graduates of the North Queensland program to enter directly into the equivalent of the second year of the full-time degree. This equates to one third of the degree course being awarded as a block credit under 'recognition of prior learning' arrangements.

In Queensland, as with other jurisdictions, community-based practitioners enter the degree program already possessing considerable expertise and first hand experience in managing environmental health improvement for Aboriginal and Torres Strait Islander communities. Typically however, their level of attainment in secondary schooling is low. These students find it necessary to access extra tuition, both on-campus and in their local area, in order to meet the academic expectations of the university program and they rely heavily on professional mentorship from their degree-qualified non-Indigenous colleagues.

Other States

There is no evidence of accredited training programs being in place in the remaining States (see NEHF and AIEH, 1998 and enHealth Council, 2000a), however informal training does occur in communities in South Australia and New South Wales. On the Anangu Pitjantjatjara Lands of South Australia, Aboriginal people have developed strong practical skills through many years of hands-on training (Nganampa Health Council and South Australian Health Commission, 1987). Community workers carry out a wide variety of environmental health functions, with housing repairs and maintenance being the primary focus of their work.

Similarly, training of community-based staff to maintain improvements to housing is an integral part of the New South Wales health department's application of the Housing for Health program (see Pholeros *et al.*, 1993), although no accredited award yet results from this training. Through additional training and future accreditation, it is possible the role of these key community personnel may be expanded to take on a wider range of

environmental health functions (Pholeros, 1999). In parallel, NSW Health has cited as one of the priority areas for action in its Aboriginal Health Strategic Plan (1999, pp. 26) the establishment of an Aboriginal environmental health worker training and employment program for community practitioners.

C. Independent Students

The third pathway into the degree is via what might be best classified as a ‘personal interest’ route. Aboriginal and Torres Strait Islander individuals apply to do the course independent of their employer or current professional direction. These learners may already be employed in a health or Aboriginal community program, may be engaged in full-time domestic duties, or may be unemployed. Most do not expect to take up training placements in the professional field in the short term but see their long-term goal as working in the community environmental health field.

The academic backgrounds of independent students are generally stronger than the backgrounds of students coming through the practitioner route. Most have already attained tertiary qualifications and either worked previously or were working in a professional or para-professional field associated with education, health, human services or applied science. However, whilst their academic credentials and work history generally gave this group a relative advantage in undertaking degree studies, they suffered a relative disadvantage to employed trainees because of the limited opportunities for engaging with the professional field and a lack of access to supporting resources.

Overview of Program Support

As is evident from the above, the pathway of entry, educational background and previous experience of environmental health practice vary considerably across the Indigenous cohort in the degree program. With Appendix 1 summarising this variation in both individual profiles and the main grouping, the challenge for the research and development program was to meet the special needs of Indigenous students in some of the most remote and educationally resource-deficient parts of the country. The existing distance education program already provided self-guided study material for each subject

and required students to attend the campus at least once a semester for intensive residential workshop.

ATSIC, OATSIH and RHSET funds were available to provide field support for the special needs of rural and remote Aboriginal and Torres Strait Islander students enrolled in the degree. These resources supported students in the following ways:-

- by providing books and resources to form a small environmental health reference library for remote community environmental health work;
- by funding travel to local communities in the region, to the University campus and to other professional development activities;
- by developing special skills training in computers, Geographic Information Systems (GIS) and other information technology; and
- by providing visits to students by teaching staff to support students studying in their own communities.

University program staff negotiated with employers for their trainees to be supported with time off and resources to study at and away from the workplace. The intention was to closely associate the student's academic development with their professional experience and practice-based skills development. Professional or workplace supervisors were appointed from managers of community agencies or from environmental health professionals in State or local government authorities. Students were also encouraged to select a personal mentor with whom they could work effectively during the course. Each semester they were also asked to identify local tutors to support their learning in the many subject areas of the degree. This approach was devised from the outset in recognition of the importance placed by Indigenous students on linking personal, professional and academic aspects of the learning experience, so that their program of study had relevance and applicability to environmental health issues in their community. In order to achieve this, the University of Western Sydney research program and teaching staff initially relied on the capacity of the core problem-based learning subjects to develop the necessary professional practice skills relevant to and appropriate for any workplace setting.

1.3 Issues Arising

My own work from 1993 to 1997 was the delivery of professional education for environmental health practitioners enrolled in the University of Western Sydney degree. I joined the Indigenous Communities' Environmental Health Research and Development Program as a research officer mid-way through its first year and, among other things, coordinated the delivery of the environmental health degree program to that first Indigenous cohort. My research background at that time was a Masters of Environmental Studies thesis exploring potential environmental health professional curriculum changes that would bring a 'design' approach to issues of practice, rather than a 'problem-solving' approach (see Stephenson, 1994). The new position of Research Officer to the Indigenous Communities' Environmental Health (ICEH) Program presented me with the opportunity to review how Indigenous students responded to the entire course, although I was particularly interested in their experiences with the problem-based core curriculum. My role as a researcher provided a unique circumstance from which to undertake this inquiry. Being seconded from a teaching and course management position to a fully funded research position meant that I could be close to, but still independent from, the power relations between teachers and students in the University program, and professionals and apprentices in the workplace. From this independent position I could take up a type of action-researcher relationship with the learners rather than a more restrictive participant-observer research relationship.

I, along with the rest of the research team and the teaching staff, assumed that this cohort would acquit themselves well in the core problem-based learning subjects simply because those subjects allowed students to focus on relevant, 'real world' problems encountered in their workplace. The reason for this assumption was that, with few exceptions, Indigenous participants of this study brought considerable work histories

with them to the program. With half of the cohort having prior training and experience in community environmental health work, and all but three of the cohort having some post schooling work history (Figure 4), the

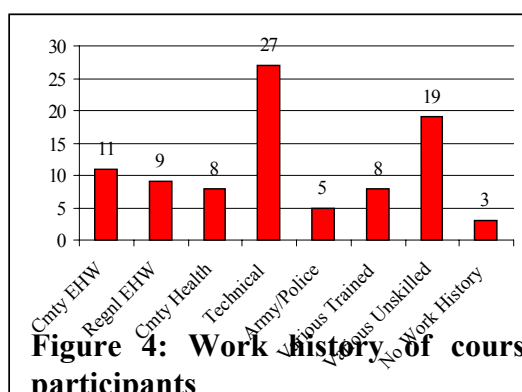


Figure 4: Work history of course participants

assumption was that this group would respond well to the subjects to do with professional practice. This first assumption was also based on the positive experience we had had with the majority of non-Indigenous students across the programs' entire history, particularly those who came to the course as 'mature age' students with prior experience in environmental health.

I also shared with my colleagues in the research team the view that the biggest challenge for the Indigenous cohort in the early stages of the degree would be to perform satisfactorily in single discipline subjects such as mathematics, biology, statistics and chemistry. This second assumption stemmed from an awareness among the team that a high proportion of enrolling Indigenous students came to the degree with one or a combination of the following disadvantages:-

- Incomplete secondary education, some having not studied beyond Year 10 (see Figure 5)
- Unavailability of science subjects in rural secondary schools beyond Years 8 to 10
- Inaccessibility to tertiary preparation assistance before commencing University (see Figure 4)
- Lack of professional development opportunities in spite of many years in the workforce.

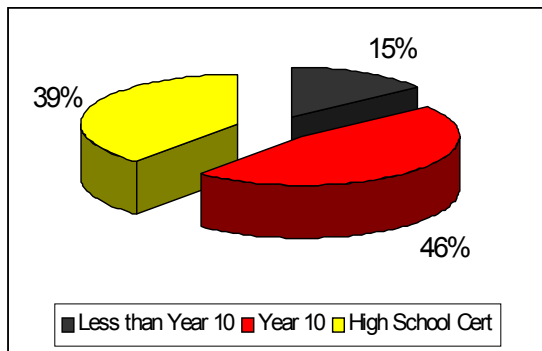


Figure 5: Secondary schooling of course participants

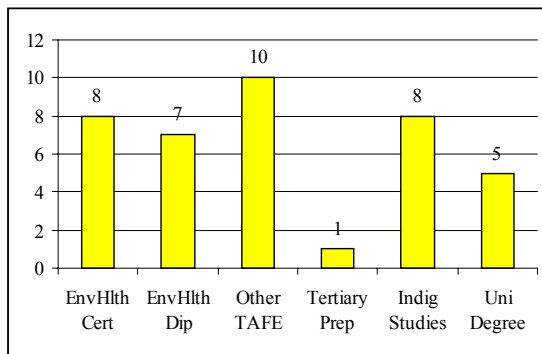


Figure 6: Post-secondary education of course participants

The following two figures illustrate the academic background of Indigenous students. Consistent with other higher education programs, (see Barnes, 2000 for veterinary science and McCall, 1998 for medical science), almost two thirds (61%) of participants had not completed secondary school, entering the course through a non-standard academic route (Figure 5). The nature of their post-secondary educational background varied considerably (Figure 6). One fifth of students had attained TAFE qualifications in community-based environmental health; a further quarter of the total cohort had attempted or completed other TAFE programs; 8 students had some formal education in Indigenous studies at TAFE or University level; and 12% (5) had been

previously enrolled in, or had recently completed, a university degree.

Despite this combined data on the academic backgrounds of participants, the academic performance of students across their first two semesters of study demonstrated that neither of the assumptions above held true. Indeed, by the end of the second year of the program, a clear picture to the contrary had developed. It became evident that the majority of Indigenous students who had accessed tutorial support in the science disciplines performed well enough in assignments and examinations to pass these subjects. It was also evident that course participants had very real trouble satisfying the requirements of the core problem-based subjects, so much so that at least half of the cohort (54%) did not submit some or all of the necessary assignment work, resulting in an ‘abandon’ grade. At the same time they had successfully submitted specialised work

in elective subjects. Figure 7 illustrates this trend for nine of the thirteen subjects

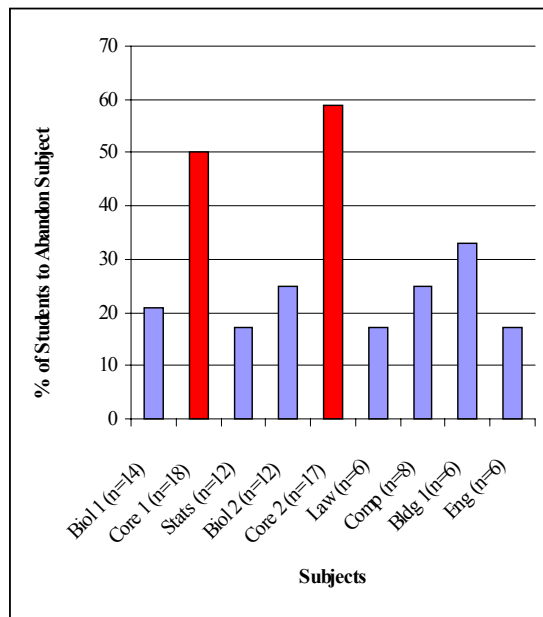


Figure 7: Core and elective subject abandon rate in years 1 and 2

attempted by participants across the first two years of the program. It shows the percentage of students not completing core subject (in red) as consistently higher than the percentage of students to abandon elective subjects (in blue). No students abandoned studies in any of the remaining four electives of Chemistry 1, Chemistry 2, Building Construction, and Microbiology).

This outcome contrasted with over ten years successful experience with non-Indigenous students from a wide range of backgrounds. Mixed reactions from the program staff included general surprise and delight in response to the effective tuition in the disciplinary subjects. There was also concern expressed by University staff and workplace supervisors about the performance of students in the core subjects, since it was these subjects that were designed to make up the core professional practice component of the program. From the outset, program staff felt confident that students would perform well in core subjects because they allow students to derive issues and solutions from their own community and work settings. This conviction was now called into question.

The ICEH Program team believed that the non-traditional academic backgrounds of the majority of Indigenous students played a significant part in their inability to perform well in core subjects. In response, program staff teamed up with the University's learning development unit to design a number of dedicated 'study skills sessions' for delivery to students during their visits on campus. In the broadest sense, these study skills workshops were designed 'to assist new Indigenous Australian students to understand and prepare for the discourse of the university environment' (Centre for Higher Education Development, 2000, p. 8). At a practical level, they taught students

the ‘rules of the game’ – how to interpret the academic task, ways of accessing relevant information, how to read purposefully, the use of paraphrasing, and how to write academic reports which met with their assessors’ expectations. This initial response did assist the bulk of students to better understand what was expected of them in preparing their work for submission. However, this improved understanding was not automatically mirrored by a sustained improvement in student performance in core problem-based subjects. The study skills sessions did seem to address issues of academic standards and examination performance in elective offerings, but with students repeatedly not submitting some or all components of the core subjects’ assessment, there appeared to be a deeper failing in core subject praxis - a failing that could never have been addressed through traditional academic skills development tuition.

I began a search for a greater understanding of *why* it was that Indigenous students experienced such difficulty engaging with core problem-based subjects. As illustrated in Figure 8 below, I was also interested in identifying and implementing teaching strategies that could enable students to improve their academic performance in both core and specialist subjects. Towards the end of the first year of intake, I began a series of field visits to students in work placements. Out of these visits I developed a strong sense that the problem-based learning core of the degree program was not serving the workplace needs of Indigenous students as effectively as non-Indigenous students. I began to suspect that in spite of its assumed responsiveness to all students’ need problem-based learning for professional environmental health education was not a ‘one size fits all’ solution.

I began to question just how ‘real world’ the experience being provided in the problem-based core subjects was. And I began to question whether the teaching processes used by program staff and the type of skills developed by students in these subjects were the most appropriate for the Indigenous cohort.

Indigenous Environmental Health Professional Education

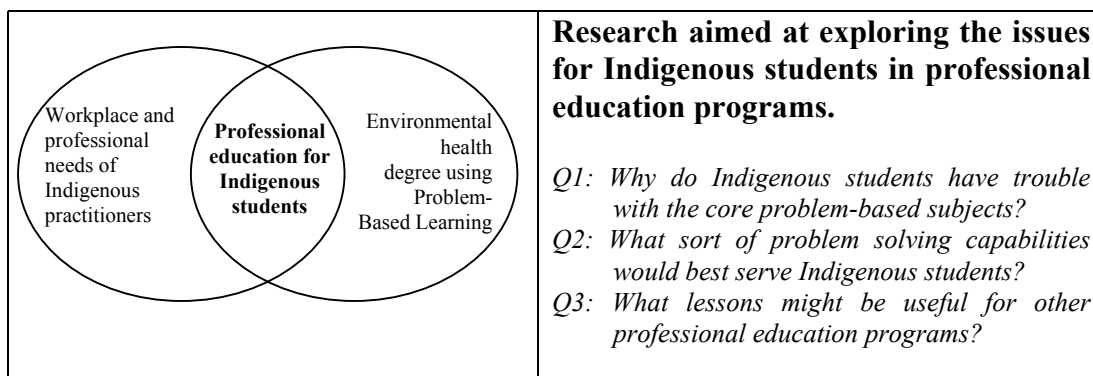


Figure 8: Defining new ground for Indigenous professional education

I wondered whether the practice of Indigenous students would benefit more from the development of additional or alternative skills to those currently promoted in core environmental health subject. There was clear evidence, for example, that practice-oriented core subjects of the program were not providing Indigenous students with sufficient skills to confront the complex and multifaceted realities of the professional workplace. Perhaps the assumptions about the program’s objectives and capabilities needed to be understood from within a different social and political perspective, one that places the social and political struggle for self-determination at the heart of Indigenous professional practice and education. A major focus for this research thus became a search for a greater understanding of these difficulties in parallel with the search for practical strategies to improve the poor performance of students in the problem-based learning subjects.

Over time, more questions about the teaching and learning approach in the degree course came to the fore, including:-

- Are the teaching processes historically used by program staff, and the types of skill developed by students, the most appropriate for today’s practitioner in a fast-changing profession challenged by unpredictable pressures from local urban developments and environmental degradation?
 - Would exploring the most appropriate approach in terms of the Indigenous cohort’s interests illuminate problems within the program as a whole?
 - Would the practice of Indigenous students benefit more from the development of additional or alternative skills, or quite a different teaching and learning approach?
- and,

- Is the professional practice of an Indigenous practitioner in a mainstream profession more complex, more contested, and therefore radically different from the work of their non-Indigenous counterparts?

In an attempt to focus the inquiry and place workable boundaries around the research direction, I found it important to draw back from these questions and remain grounded in the messages coming out clearly, month by month, from observation and discussion with students. I was guided by the desire expressed by the students that issues raised in the academic arena should have a direct connection to their workplace activities, and that the relationships with their workplaces and in their communities should be constructed in ways that supported them in their academic studies. Students were calling for a coherent link to be made between the professional education and the professional practice components of the program. At the moment they were being asked to study and to practice cross-culturally, and they could not find suitable role models in the profession for either of these activities.

Figure 9 below represents the special challenge for Indigenous practitioners to explicate the nature of their professional role and define how it should differ from that of the existing conventional practitioner role. It illustrates the cross-cultural and trans-situational point that Indigenous trainees find themselves, caught between a poorly defined Indigenous professional practice on the one hand, and a highly regulatory, conventional and mainstream practice of environmental health officers on the other hand. It asks focusing questions which, if answered well through this research, could aid students, workplace colleagues and supervisors, and academic staff in finding solutions to working cross-culturally, a challenge inherent to all professional practice.

My early work identified the professional interface for trainee Indigenous environmental health officers as ill-defined and therefore not clearly understood by the wider profession.

Indigenous Environmental Health Practice

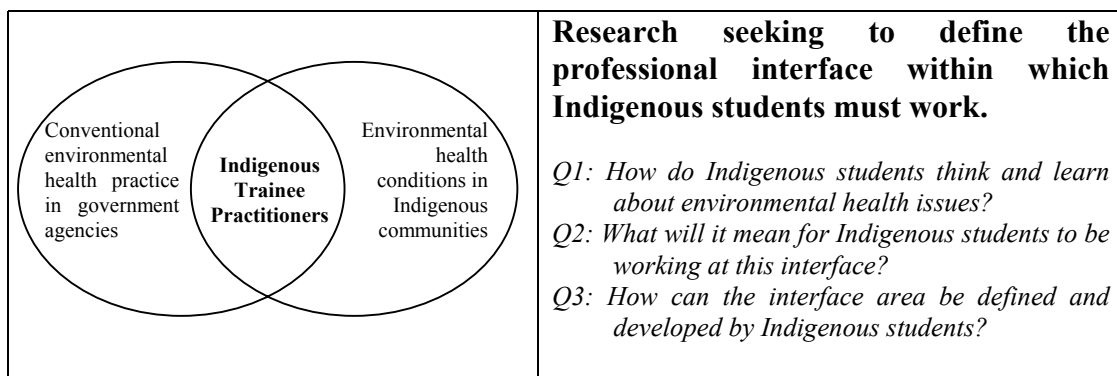


Figure 9: Defining new ground for cross-cultural professional practice

Compounding this problem was the fact that at the time this research commenced there were no professional Aboriginal or Torres Strait Islander environmental health role models available to students. These students were therefore breaking new ground. Their challenge was to develop and define the dimensions of their professional practice in ways which maintained their standing in community *and* gained them the recognition and credibility considered appropriate for work by mainstream professionals and environmental health managers. It was expected that they would continually encounter situations outside the professional training manuals and textbooks of mainstream public and environmental health. It was equally likely that they would find that the models of even the best non-Indigenous environmental health officers would not necessarily provide the guidance for handling their situations. However, the more acculturated they became to the mainstream values and attitudes associated with conventional environmental health practice, the more they risked being separated from their community.

The dilemmas posed by the interface areas of both Figures 8 and 9 have potentially significant implications for the University curriculum, in particular those subjects in the course that claimed to dwell on issues of practice – the core problem-based learning subjects. In the environmental health program under investigation here, core subjects are not generally prescribed by detailed subject descriptions, nor do they employ formal lectures. Instead, staff introduce students to real world situations that lend themselves to investigation through the application of problem-solving processes. Students are invited to treat the learning opportunity as a problem (i.e. an unknown) and, when on campus, learners work in groups to develop skills and techniques to support their

investigations into the core problem. The groups are guided to suitable learning experiences which may include searching literature in the library, via the Internet or elsewhere, contacting resource people on campus, and talking to experienced practitioners in Government or industry. Resources supplied by course staff include facilities and equipment applicable to examining the situation and a learning environment conducive to team work and discussion. Being distance students, they are also assessed on how they continue developing these professional practice skills on similar problems in their local context when they return home. The home and workplace learning circumstances of students impact on each of these educational dimensions of the core curriculum. With learners in this program coming from 41 different backgrounds, there was a need for this research to explore individual learner's needs and responses to the curriculum and to the professional practice environment.

1.4 A Research Direction Emerges

This research, then, is about cross-cultural professional education for Indigenous environmental health practitioners, and involves an investigation into the experiences of the Indigenous cohort within both the academic and professional practice domains of learning. The research aims to explore and describe:

- (a) the experiences of Indigenous environmental health students in each of the two learning domains;
- (b) the relationship between these experiences and the teaching of the problem-based core learning subjects; and
- (c) possible ways the professional education program can be changed so that the interests of Indigenous environmental health practitioners working in Indigenous communities can be better served.

In particular the research examines whether core problem-based learning subjects in the University of Western Sydney environmental health program adequately prepare Indigenous students to work effectively in complex and cross-cultural professional settings. The following hypothesis is used to focus the research:-

Hypothesis: *The learning difficulties Indigenous students experience in core subjects of the University of Western Sydney environmental health degree arise from larger issues related to cross-cultural learning and traditional professional practice.*

Sub-hypothesis: *The experiences of the Indigenous students at University of Western Sydney, and in the professional workplace, can throw light on the nature of, and appropriate educational responses to, these larger issues.*

This hypothesis and sub-hypothesis represent two distinct lines of inquiry. The framework presented below (Figure 10) is designed firstly to illuminate findings from the data of each line of inquiry, and secondly, to generate evidence of links between them.

The first line of inquiry draws on the experiences of students in the learning domain of the curriculum. It aims to shed light on the nature of problem(s) faced by students in the core problem-based learning elements of the program. It focuses on the content of the curriculum and the approach to student learning. It explores student experiences with the problem-based environmental health curriculum and considers these findings against the teaching staffs' views and conceptualisations about problem-based learning as a professional education teaching technique.

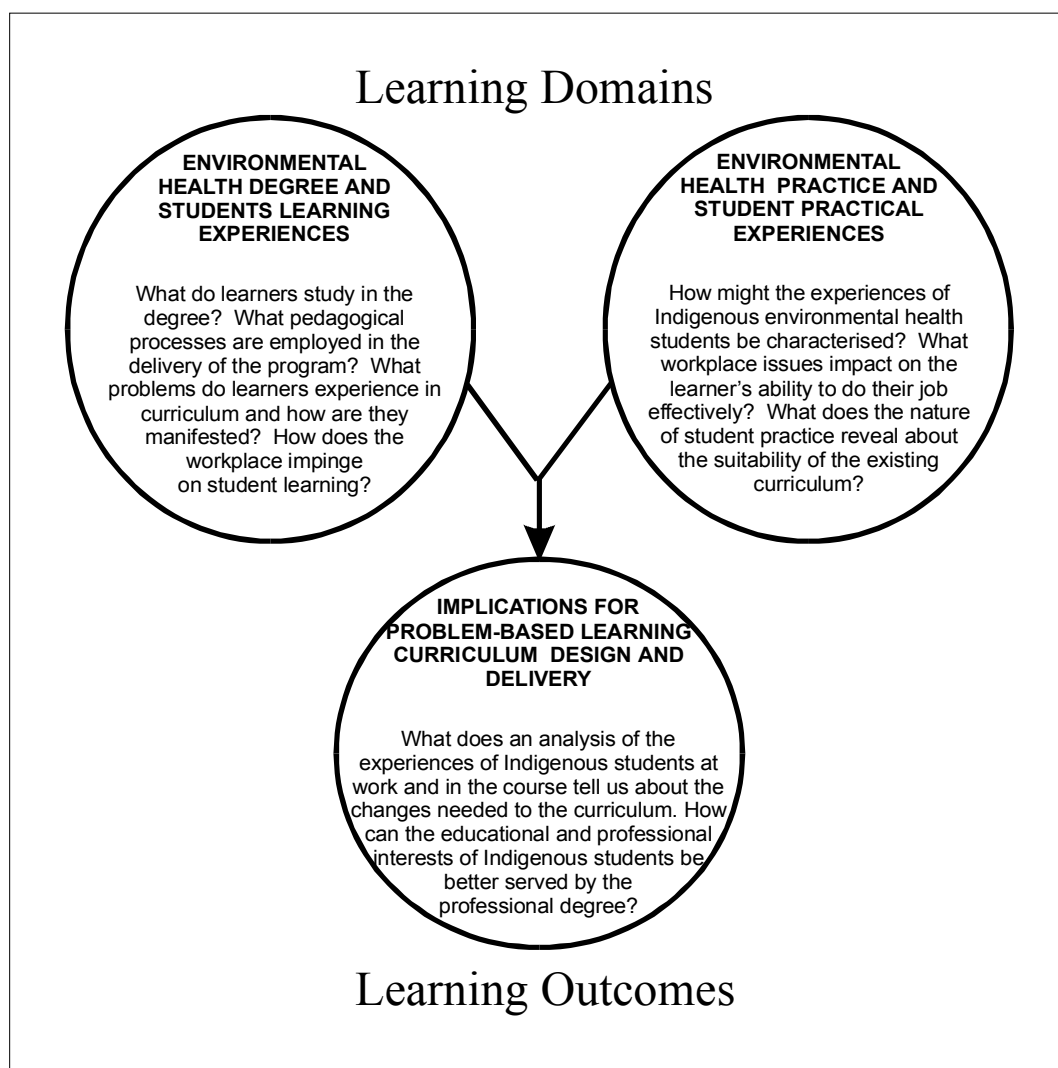


Figure 10: Framework of research

In order to structure this inquiry, the following research questions are asked:

1. *How is the University of Western Sydney environmental health professional curriculum structured and delivered?*
2. *What are the problems faced by Indigenous students in the curriculum?*
3. *How do these problems manifest themselves?*

A second line of inquiry draws upon the experiences of students in their professional practice. This component of the research aims to gain a better understanding of the workplace and professional practice context of Indigenous environmental health students. It aims to identify the ways in which the current curriculum assists Indigenous students undertake their work and to establish what changes are necessary for it to

prepare them to work more effectively in this poorly understood field of environmental health practice. Research questions here include:

4. *What is the nature of Indigenous environmental health professional practice?*
5. *What do Indigenous students study in the degree that is applicable to their work?*
6. *How suited is the existing curriculum to the workplace and professional needs of Indigenous practitioners?*

From data generated by these questions, this study will draw conclusions for how problem-based programs might be re-designed to better serve the educational and professional practice needs of Indigenous students. These conclusions will consider how Indigenous students can engage in learning that will better equip them to operate cross-culturally, both within mainstream practice, and in their own communities. The conclusions will have direct application to teachers and students of professional education programs training Indigenous students in mainstream educational and organisational settings. Some consideration to the literature on professional education, workplace learning and culturally appropriate Aboriginal and Torres Strait Islander education will be given prior to addressing these questions.

CHAPTER TWO – CROSS-CULTURAL AND PROFESSIONAL EDUCATION

2.1 Professional Education and Workplace Learning

With few recent exceptions (see Eraut, 1994 and Taylor, 1997) literature about professional education as a field of study distinct from higher education is rare. For decades, the emphasis of much of the professional education literature has centred on the nature of the professions and the processes and implications of professionalisation (see Schein, 1972; Curry and Wergin, 1993a; National Board of Employment, Education and Training, 1996); the education and training for specific professions (see Boyatzis *et al.* 1995 on management; Jennett and Pearson, 1992 on medicine); and

continuing professional education (CPE) aspects of professional development (see Forster *et al.* 1991; Bennett and Fox, 1993; and Jarvis, 2000).

The following literature review does not intend to cover all of this ground. For the purposes of this work it is more useful to identify some of the broad characteristics of professional education and discuss how these traits render it different from other tertiary or higher education approaches to teaching and learning. As a relatively new adaptation and amalgam of professional education and organisational learning, 'workplace learning' will also be discussed. This contemporary area of educational research and practice has relevance to this discussion because of the work-based and distance education elements in the Indigenous environmental health professional education program. From there I then undertake a review of a relatively small but informative collection of scholarly material discussing issues for educators and program providers involved in cross-cultural and professional Indigenous education in Australia. Problem-based learning emerges as an educational strategy that has been applied with some success in cross-cultural and 'non-traditional' learning situations, both in this country and overseas. From that point of entry, I explore in greater detail problem-based learning as an educational strategy for the professions before concluding the chapter with an exposition of its application to environmental health professional education.

Professional Education

Professional education differs from higher education generally in three distinct ways (Taylor, 1997, p. 3-4). Firstly, professional education programs have traditionally shared a dynamic relationship with the professions, while higher education programs have not had as close an association. With increasing professionalisation of areas of work since the 1950s (Eraut, 1994), formal links with professional courses have more recently been extended to employers and government agencies. The professions, government, industry, community agencies and a large range of other interest groups may each now influence the 'course structures and management, as well as curriculum content and delivery' (Eraut, 1994, p. 4) of professional programs related to their field. Additionally, professional education differs from other higher education programs because of its curriculum interests in addressing knowledge for and about practice, and the fact that it is delivered in both university and professional practice contexts. The

final distinction Taylor makes relates to learner motivation. When compared with many other students in higher education, professional education students:

...are distinguished by their motivation to study for a very specific purpose which will have a direct influence on the rest of their working lives (Taylor, 1997, p. 4).

Distinguishing professional education from higher education in this way does in no way imply there is a universal or agreed approach to teaching and learning for all professional education programs. Indeed the evidence points to the opposite. To begin with, according to Bines (1992a, p. 12-16), there are three general classifications of professional education, within which any education and training program for the professions may broadly fit. These include:-

1. 'Apprenticeship' education – characterised by on-the-job training with some block or day programs in association with a training school or college and 'cookbook' knowledge embodied in practice manuals;
2. 'Technocratic' education - typically involving the systematic development of a knowledge base and interpretation and application to practice through multidisciplinary exercises in colleges and universities, with some supervised practice in the workplace; and
3. 'Post-technocratic' education – emphasising the acquisition of professional competency development through experience of practice and reflection on practice with coaching from work and institution-based tutors.

The educational qualifications for entry to a profession are frequently different from the full requirements for registration as a practitioner or to become a full member of a professional association (NBEET, 1996, p. 29). Universities today are primarily concerned with offering vocational courses which satisfy the basic educational requirements for entry to professions while also providing generic professional skills around communication, problem-solving and reflective practice. In attempting to do so:

[adult educators and] institutions of higher education are...presented with a complex pattern of pressures of demand, supply and quality in designing, delivering and managing professional education (Watson, 1992, p. 7).

It comes as little surprise then that, as with the broad experiences of the higher and adult education fields of practice, any number of course designs and pedagogical techniques

tend to exist within, and have influence over, every one of Bines' three professional education classifications.

In today's higher educational context, the challenge for professional courses is to manage the tension between providing graduates with the skills and competencies demanded by the profession and providing them with those generic professional practice and core learning abilities that educational institutions strive to inculcate in learners. The potential for disagreement over graduate qualities and competencies between educators on the one hand and the professionals, individually or corporately, on the other has existed for some time. Schein's criticisms of the professions and of professional education in the early 1970's for example highlighted the challenge that lay ahead for adult educators and institutions of higher education interested in developing courses for emerging professions.

Professional education is almost totally geared to producing autonomous specialists and provides neither training nor experience in how to work as a member of a team, how to collaborate with clients in identifying needs and possible solutions, and how to collaborate with other professionals on complex projects.

Professional education provides no training for those graduates who wish to work as a members of, and become managers of intra- or inter-professional project teams working on complex social problems.

Professional education generally underutilises the applied behavioural sciences, especially in helping professionals to increase their self-insight, their ability to diagnose and manage client relationships and complex social problems, their ability to sort out the ethical and value issues inherent in their professional role, and their ability to continue to learn throughout their career (Schein, 1972, p. 60).

Much more recently Cavanaugh (1993, p. 107) cites numerous contemporary sources of criticism about the performance of professional education in preparing graduates for professional practice environments. Her work points to a combination of the relationship of course providers to the profession and the relationship of learners to the educational experience, as being the central causes of on-going dissatisfaction with professional education outcomes.

With respect to the first concern, that of the relationship between program provider and profession, Watson (1992) contends that the general educational aims of university-based professional courses invariably tend to be larger (and less well defined) than

those of training providers of single discipline or professional practice courses. Conversely, the professions invariably complain about university courses that have 'not taken the time or trouble to inculcate aspects of working practice or assumptions they believe to be core to that profession, or indeed if the university has gone out of their way to be critical of these' (Watson, 1992, p. 4). As Burrage *et al.*, (1990, p. 217) point out, practitioners and professors often hold divergent interests in the knowledge *about* the profession, as distinct from *of* the profession.

[Professional organisations can] influence university courses, some with more impact than others, but they cannot fend off university influences on staff and students. Universities will seek to broaden and academicize the knowledge base, and to challenge some cherished, long established, professional practices (Eraut, 1994, p. 8).

Conversely, where the hold on the course curriculum is with the profession, it is at risk of being swamped by competency requirements and have a stronger emphasis on technical knowledge development. Aldred *et al.*, (1997, p. 1) point out that this knowledge demand by the professions has led to the undergraduate curriculum being viewed from an increasingly instrumental perspective and has reduced the capacity for critical thought amongst graduates.

The second concern running through the professional education literature relates to the relationship of learners to their professional and educational experience. Repeatedly we hear of the challenge for professional education to bring theory and practice closer together in learning encounters (see Bines, 1992a, p. 13; Cavanaugh, 1993, p. 108; and Taylor, 1997, p. 4). The earlier concern in the literature about the worth and status of profession (see Curry and Wergin, 1993b), the essential properties of professionals (see Torstendahl, 1990), and the processes of professionalisation (see Siegrist, 1990), has given way to a more meaningful discussion on how to better prepare the professions for current day ethical and reflective practice. Teaching techniques that facilitate integrated, topic or problem-based professional learning are seen by many (Woods, 1994; Bines, 1992b, p. 61; Boud, 1985 and Stretton, 1985) as the answer to many of the shortcomings of professional education listed by Schein (1972, p. 59-60) and others over the decades.

Workplace Learning

Over the past four or five years the context of employment has become a central focus for a wide range of vocational and non-vocational learning (Boud, 1998, p. 1). Emerging in the social and political context of the United Kingdom in the late 1980's and 1990's, work-based learning 'was a response to criticisms of higher education as being too divorced from the world of employment and the economy' (Boud, 1999, p. 8).

Hager (1998) attributes the theoretical foundations of workplace learning to a range of existing and overlapping educational theories and writings, each contributing to a more dynamic and effective work and learning environment for both employer and employee. The combination includes: experiential learning (Kolb, 1984; and Boud *et al.*, 1996); Dewey's theory of learning (1966); Argyris and Schön's work on professional practice (1980; and Schön, 1983, 1991); Marsick and Watkins' theory of informal and incidental learning (1990); and the generic skills and economic perspectives emphasised by Berryman (1993) and others. With such an eclectic combination of theoretical influences informing the concept, it comes as little surprise that variant meanings, connotations and perspectives on work-based learning can be found in the educational and organisational learning literature. Each takes a different view of the workplace. Candy and Matthews (1998, p. 14) suggest that workplaces may be identified as:-

1. sites for formally accredited learning
2. sites for complex technical interactions and problem-solving
3. sites for sharing and creating knowledge
4. part of the knowledge society
5. organic entities, capable of learning and adaptation in their own right

The first of these two of these five emphasise individual knowledge development while the remaining three ideas imply more sophisticated relationships between individuals amid wider groupings of people within the workplace (Matthews and Candy, 1999, p. 53). In pointing out that some ways of identifying workplaces are more complex and sophisticated than others, the authors contend that 'each has a place in understanding the total phenomenon, and each has its particular strengths and weaknesses' (Candy and Matthews, 1998, p. 14).

The sorts of learning relationships Indigenous environmental health students in this study have with their workplaces are best characterised as being within the first conception – the workplace being a site for formally accredited learning. The very nature of distance education transfers elements of the educational experience away from the traditional academic setting and, in this case, mostly into workplace learning sites. Yet, this relatively simple distribution of learning to the workplace does neither naturally, nor automatically bring with it any challenge to ‘the essential supremacy of abstract propositional knowledge and the credentialling role of formal education institutions’ (Candy and Matthews, 1998, p. 15). The curriculum of a distance education degree program such as the one being investigated here remains firmly in the control of the host university. Whilst the University of Western Sydney environmental health program can really only be considered ‘workplace learning’ because students study *from* work, the newly emerging literature in this field does help to describe student’s experiences of studying and working concurrently within a professional education and training program context.

2.2 Indigenous Professional Education

Issues Arising

In her recent book, Cathryn McConaghy (2000) explores the complex and diverse conceptualisations and implementations of Indigenous adult education, with a focus on the shifting relations of power and legitimacy within education in post colonial Australia. As a sub-field of Indigenous adult education (see also Bin-Sallick *et al.*, 1994), Indigenous professional education offers a similarly rich platform from which to view changes and challenges brought by Indigenous learners to educational institutions and the professions. Yet consistent with mainstream professional education literature there is limited published material on the experiences and issues of Indigenous Australians undertaking professional education programs. This situation is of little surprise given the National Board of Employment, Education and Training’s (1996, p. 53) revelation that:

...many professional fields have significantly biased enrolment profiles even at the undergraduate level, with under-representation from rural, isolated and low socio-economic status students evident...

Despite its scarcity, literature on Indigenous professional education describes a field that is thwarted by a complex array of interrelated social, political, economic and historical dilemmas as well as a delicate combination of personal, professional and institutional interests and agendas. McDaniel and Flowers (1995) and Foley and Flowers (1992) for example, argue strongly that many of the issues in Indigenous adult education are a direct result of the deep-rooted historical position of the Australian government in exercising control over Indigenous peoples. They also conclude that the majority of difficulties experienced both by Indigenous students and the program deliverers are derived from institutional agendas rather than from cultural differences (McDaniel and Flowers, 1995, p. 243). They see and explicitly state, that teaching staff have a responsibility to engage in a degree of self-examination and to exercise uncompromising honesty and fortitude when preparing, conducting and evaluating the work of Indigenous peoples in formal training programs (p. 244).

McDaniel and his colleague provide evidence of attitudes and assumptions held by program providers and deliverers who purport to be committed to the empowerment of Aboriginal and Torres Strait Islander people, that prove to be misguided and unhelpful to Indigenous students. They, along with Singh (1990, p. 17), call upon adult educators of Indigenous learners to reflect carefully and honestly upon their role as teacher, having identified educators who:

- maintain a paternalistic desire to nurture in order to be needed,
- sincerely do not wish to provide another negative experience, or
- view the success of their program through student numbers and funding which can only be maintained if unsuited students remain in the program,

O'Brien and Callow (1992, p. 12-18) have characterised eleven different lecturer types of teachers involved in Aboriginal and Torres Strait Islander education and considered the resultant learning reality each provides for Indigenous students. The tabulated

Lecturer Type	Learning Reality
Non-Aboriginal fringe dweller	Over-compensation with a host of special allowances for students
Land Rights Groupie	Defend and protect students, often needlessly; special attention, allowances and privileges
Philosopher	Can intimidate students by expecting them to intellectualise their Aboriginality
Awestruck, or Seekers of Ancient and Mystical Knowledge	Subtly pressure students to live up to their noble and mystical ideal
Professional	Can extend a warm net of acceptance and understanding that can cushion reality of academia and hinder tertiary progress
Exploiters (tutors rather than lecturers)	Can prolong requirement for a tutor for monetary gain and sometimes write students essays to demonstrate student progress
Idealistic Helper	Ultimate hypocritical patronizers of students. Pretend friendship etc while quietly determined to mould students into the image THEY see as 'right for Aborigines in the 1990's
Academic	Defer to students for answers on all things Aboriginal; ask endless questions and expect students to have all the answers
Nervous Nellie or Nervous Norm	Tend to isolate students whether by failing to recognise their Aboriginality or by making too much of it
Indifferent	Can be especially demanding on Aboriginal students because 'no-one gets favours here!'
Racist	Can intimidate, belittle and embarrass students – but usually do so in such subtle ways that they cannot be caught

Table 1: Lecturer types (Weir (unpublished), adapted from O'Brien and Callow, 1992, p. 12-18)

summary of their work (Weir, unpublished) reproduced here does not portray any particularly helpful approaches for teachers looking for guidance on ways of working purposefully with Indigenous students, except to say perhaps that each should be avoided. It extends Singh's general descriptors and help to inform how each approach contributes to Indigenous students receiving a 'quality-compromised' education (McDaniel and Flowers, 1995, p. 237-244). The quality of any teaching program, the credibility of its graduates and the reputation of the host institution therefore hinges on more than just providing a curriculum and recruiting and retaining a certain the number of students.

The well-documented message coming from these writers is that programs and providers that allow Indigenous peoples to pass through award courses where they fail to meet the objectives and standards required of non-Indigenous practitioners are responsible for the on-going disempowerment of these peoples. The experience of the full challenges and difficulties of the professional program is essential for Indigenous students to fulfil the role of cultural broker or mediator between Indigenous and non-Indigenous worlds. As professional practitioners they must each acquire particular types of non-Indigenous skills and forms of knowledge.

Indigenous students more often than not come to professional education programs through mature-age entry pathways and with greater social purpose than their non-Indigenous peers (Foley and Flowers, 1992, p. 65). Aboriginal people rarely see entry into accredited courses solely as a means to a better job for themselves, but more often view it as a means to draw upon more powerful forces in the fight for a better standard of living for whole communities of people (Thurecht and Vose, 1997, p. 604; Barnes, 2000; Dennis Foley, 2000). These students are more likely then to be naturally drawn into courses or fields of investigations that require consideration of the combined social, cultural, historical and political dimensions of a problem.

The Problem-Based Learning Option

Whether problem-based professional education programs are ideally suited to assisting Indigenous students is difficult to determine as there is little scholarly work linking problem-based curricula and Indigenous professional education. One exception is research conducted by Thurecht and Vose (1997) who contend that problem-based learning is an ideal model for cross-cultural learning (p. 602). Importantly, their findings, from an on-campus program perspective, appear to run counter to my observations of a distance delivery professional education program (see Chapter One). Their study delved into the experiences of twelve Aboriginal and Torres Strait Islander students and graduates of a problem-based Health Science degree. It set out to determine the extent to which their Indigenous student cohort applied the skills they developed through a problem-based curriculum to their working lives. In setting the context for their research, Thurecht and her colleague point to four major challenges

facing Aboriginal and Torres Strait Islander students in tertiary courses. These are summarised as the need to:

- bridge an often wide gap between school education and tertiary expectations;
- manage family responsibilities when 'white-fella' education is not always highly regarded;
- reconcile the sense of not belonging in an ethnocentric and culturally insensitive institution; and
- orient problem investigation toward collective learning and positive cultural change.

Thurecht and Vose used student interview data to explain how problem-based learning helped students to successfully meet these challenges. Among their claims is the proposition that since the focus of problem-based learning is primarily on 'process', rather than predominantly on 'content', students develop lifelong learning skills 'through immersion and practice' (p. 604). In regard to the second and third points, that of mismatch between family experience and university experience and the sense of not belonging, it was reported that the small group processes characteristic of problem-based learning held the key to improved communications and allowed for the development of closer, more understanding relations between Indigenous and non-Indigenous students. Finally, in response to Indigenous student concerns over the inappropriateness of an individualistic and competitive learning system which inadequately recognises prior knowledge and skills, problem-based learning was valued for encouraging cooperation and the sharing of the learning experience, and because it required students to draw upon their collective past knowledges and experiences in developing new ideas and skills (Thurecht and Vose 1997, p. 606).

Their findings speak highly of the applicability of problem-based approaches to the education of Indigenous professionals. Their research affirms that Aboriginal and Torres Strait Islander students can and do develop the same sorts of skills as non-Indigenous students from studying in a problem-based format. Others however have acknowledged the difficulties Indigenous students experience in problem-based learning courses (see McCall, 1998). In her study, McCall compared the experiences of Indigenous Australians in a problem-based medical education program with those of mainstream Australian and international students. She identified a range of structural,

academic, support and cultural reasons for the reduced performance and satisfaction of Indigenous students. Again, this study featured on-campus students engaged in full time academic programs which makes its findings difficult to directly relate to the University of Western Sydney distance education environmental health program. Nowhere in the literature is there an analysis of the effectiveness of problem-based learning for Indigenous students engaged in distance delivery professional courses while they work in the field of practice at the same time. In the context of Indigenous environmental health practitioner education then, a new question arises....‘Are the skills developed in problem-based courses necessarily the most useful ones for Indigenous professionals to take into practice?’ By limiting their inquiry to the question of how well students apply particular problem-based learning skills to their western-based professional practice after completing on-campus studies, Thurecht and Vose fail to take up another important line of inquiry. Such an inquiry would ascertain whether problem-based learning programs adequately prepare Indigenous students to work effectively in the more complex aspects of their professional practice within both mainstream organisations and Indigenous communities anywhere in Australia. Findings of this type of inquiry could shed light on alternative forms of knowledge and different types of skills that could be of greater benefit to Indigenous practitioners in overcoming difficulties encountered in their professional practice. Further, there is the possibility of extending existing concepts and understanding of problem-based learning from explorations into this different perspective.

Because of the small amount of literature directly related to Indigenous Australians in problem-based programs, I have looked for research in other fields that might offer insights. Detailed reviews of the experiences of ‘non-traditional’ learners in the United Kingdom provide one such source. Non-traditional learners, according to Wright (1991, as cited in Taylor, 1997, p. 130), are learners who did not achieve the standard school leaving qualification necessary to access university courses at that time. In the work of Susan Weil (1988, 1989) and Imogen Taylor (1997), high proportions of older women, manual workers, certain ethnic minorities and disabled people are represented in this group. In looking at the experiences of non-traditional learners entering courses designed to meet the needs of the dominant culture, Weil (1989) developed a notion of disjuncture to explain various situations in which learners felt at odds with themselves.

According to Taylor (1997, p. 137), adult learners in Weil's study experience disjuncture in relation to the following:

- their expectations of and initial encounter with the formal learning context
- their expectations and experiences of teaching and learning approaches
- the ways in which social differences and power relations were experienced and managed
- the extent to which core aspects of identity felt threatened
- the management of multiple and conflicting roles
- the kinds of knowledge allowed and disallowed; and
- the impact of contradictions between tutor's private and public stances.

Drawing on Weil's work, Taylor and Burgess (1997, p. 114) identify problem-based learning as an educational approach that enables non-traditional learners to integrate their learning and manage the impact of disjuncture. Here again though, Taylor and her colleague limit their assessment to how certain attributes of problem-based learning can address Weil's concerns for learner disjuncture. Consequently they fail to identify and analyse other less-obvious limits to problem-based teaching techniques in meeting the professional practice needs of their non-traditional student cohort. The impact of this important omission in the special circumstances of a distance delivery program, where students are also training practitioners, will be explored in more detail in Chapter Four. A more thorough review of the problem-based learning literature will first take place.

2.3 Problem-Based Learning and Beyond

A Teaching Method

It could be said that every form of teaching makes use of case studies and problems to assist student learning. In discussing when and how these problems are used, it is important to make a distinction between conventional or traditional forms of teaching, and courses whose whole curriculum is problem-based. The former use problems to illustrate how to apply certain knowledge after it has been learned, while the latter use particular forms of problems to drive the learning (Woods, 1994). According to Boud and Feletti, problem-based learning is 'a way of constructing and teaching courses using

problems as the stimulus and focus for student activity' (1997, p. 2). But just as problem-based learning cannot claim exclusive use of problems for learning, many educators would agree that Boud and his colleagues' broad working definition of problem-based learning allows for wide interpretation of the nature and role of the problem. The bulk of the practitioner-generated literature demonstrates the wide range of ways problem-based learning courses and subjects are delivered (see Peterson *et al.*, 1997; Forrest *et al.*, 1997; and Platfoot, 1995) and assessed (see Lovie-Kitchen, 1997; Cowdroy and Crick, 1997; and Isaacs, 1995). Indeed Boud (1985, p. 13) affirms that problem-based learning can take many different forms depending on the nature of the field and on the particular goals of the program of which it is a part.

There are other influences on the final form a problem-based curriculum takes. These include, but cannot be limited to, barriers to change from within the educational institution (see McMillan, 1993; and Little and Sauer, 1997), professional accreditation interests (see Stretton, 1985), and economic imperatives (see Albanese and Mitchell, 1993; and Drinan, 1997).

Problem-based learning proponents generally argue that self-directed learning courses are under-resourced and, because University education is experiencing unrelenting cut-backs in funds, they are at risk of giving way to a return to large-scale lecture-based programs. However there are others who argue that self-directed learning approaches are in fact secure in modern adult education practice. Collins (1995, p. 81) for example believes there exists an important 'alternative discourse on adult education which is driven by marginalized moral and political commitments' and which continues to be sidelined. The alternative discourse Collins refers to here is critical theory (see Welton, 1995; Carr and Kemmis, 1986; and Mezirow, 1995) and critical pedagogy (see Freire, 1972; Wallerstein, 1983; and Foley, 1995a), both of which will be explored with respect to problem-based learning in later sections of this thesis.

With multiple interpretations of problem-based learning now in existence, argument over the legitimacy of its various applications constantly occurs within the problem-based teaching and research community (Chen *et al.*, 1995, p. 9). There is also a much broader ideological discussion, largely occurring outside of this community, wherein

the conceptual foundation upon which such adult education practices are built is being questioned. Freire (1970), Mezirow (1995), Welton (1995) and Collins (1995) for example, expose these limitations. They argue that contemporary adult education practices that are founded on the thinking and assumptions of cognitive and humanistic psychology, and devised by mainstream and upper socioeconomic population segments, do not adequately serve the interests of the poor, the oppressed and the disenfranchised in society. This latter point becomes central to the development of this research and the analysis of Indigenous Australian student experiences in the University of Western Sydney professional education program in environmental health, and will be reviewed in greater detail in later chapters.

Application of Problem-Based Learning to Professional Education

Different fields of graduate practice, in concert with other institutional and external imperatives, have led to the creation of quite an array of problem-based curricula and pedagogical practices. Barrows (1986) for example, identified six different methods of problem-based learning relevant to medical education, explaining that each could achieve the primary objectives of problem-based learning, namely: the structuring of knowledge within the context of professional practice; development of effective reasoning and self-directed learning abilities; and increased motivation for learning (Ryan, 1997a). Barrow's now widely quoted *Taxonomy of problem-based learning methods* (1986) makes practical distinctions between the six methods as follows:-

Lecture-based cases: where the teacher presents students with information in lectures and uses problems or cases to demonstrate the importance or application of this information to a particular set of circumstances.

Case-based lectures: where students are presented with particular problems or cases before the information required for understanding the problem is presented in a lecture. In this example, staff expect students will analyse the problem using their prior knowledge and experience, and that they will be more attentive to the following lecture because their curiosity has been aroused.

Case method: in this approach students are given specific problems for study and research in preparation for subsequent class discussion.

Modified case-based: in this format greater attention is given to developing student inquiry skills. Students are given the written detail of a problem but not all the information they require in order to give an adequate response. Using this method students are required to first determine what additional information is important to obtain before applying it to the given situation.

Problem-based method: rather than being limited to inquiry that is centred around written scenarios, events are presented in simulated ‘real life’ formats that allow for free inquiry. Staff facilitate student exploration, often posing questions about the problem or event that might activate relevant prior knowledge of students which is useful to the situation under investigation.

Closed loop or reiterative problem-based: extending on the previous method, this approach adds a process of review and evaluation. In this instance, students are given time to return to literature and/or gain expert advice before returning to the original problem. They are required to consider how they might have better reasoned through the problem given the information they have gained from their self-directed inquiries (Barrows, 1986; Martin, 1995; and Szabo, 1994).

It is clear when considering the differences between these six teaching approaches that Barrows moves progressively from a somewhat simplistic and instrumental idea of problem-based learning to a final version that, I believe, most closely aligns with the rhetoric of contemporary problem-based learning pedagogy. Martin (1995, p. 351) gives Barrows’ classification greater scope, accepting the latter three methods within his broad schema of problem-based learning. His position gives credence to the proposition that many wide and varied conceptualisations of problem-based learning exist among those who advocate its use. Barrow’s taxonomy results in ambiguity and confusion over what approach to teaching accurately represents problem-based learning practice. The educational context within which Barrow applied his problem-based learning thinking was in the teaching of medical programs in the 1970’s and 1980’s. In

these programs there was a strong emphasis on the development of ‘hypothetico-deductive’ reasoning skills of students (see Feletti, 1993). Since that time, problem-based learning has developed in a number of ways and now caters for the varied educational priorities of different fields of professional practice.

Barrows’ earlier work (in concert with Tamblyn, 1980) in which he outlines six principles for organising problem-based learning curriculum is also of relevance to this discussion. In any problem-based learning subject or curriculum, they suggest that:-

1. problems need to be encountered first in the learning sequence, before any preparation or study has occurred.
2. problem situations need to be presented to learners in much the same way as they would present in reality.
3. students need to apply systematic problem solving approaches to the problem in ways that develop their ability to reason.
4. students need to identify their limitations (knowledge or skills) in the process of working with the problem and use it as a guide to individualised study.
5. skills and knowledge acquired by this study should be applied back to the problem to evaluate the effectiveness of learning and to reinforce learning.
6. student learning needs to be summarised and integrated into the learners’ existing knowledge and skills base (Barrows and Tamblyn, 1980, p. 22).

Boud and Feletti (1997) have since made one alteration to this list in an attempt to emphasise another important element of problem-based learning processes; that of replicating reality through group work. Building on point four of Barrows and Tamblyn above, Boud and Feletti suggest it is important for students to ‘work cooperatively as a group, exploring information in and out of class, with access to a tutor (not necessarily a subject specialist) who knows the problem well and can facilitate the groups learning process’ (1997, p. 2). This interactive group and tutor learning is closer to the workforce experience than solitary study.

A review of scholarly work in this field reveals a tendency amongst educators to create ‘sub-categories’ of problem-based learning. These more recent sub-categories seem to emerge in response to the specific needs of particular professional orientations and/or as

a result of dissatisfaction with apparent limitations to the above descriptions and processes. These distinctions have manifested themselves in a number of additional, yet similar, 'second generation' models of problem-based learning (Feletti, 1993, p. 291). According to Tegel and Dockett (1995, p. 298) second generation models each have the same educational aims as problem-based learning, however are organised and delivered in different ways. Examples include:

Integrated problem-based learning: a variation providing a framework for integrating the essential theoretical aspects of a solution to a problem with the technical, organisational and professional domains relevant to the type of problem. Cowdroy and Maitland, (1995, p. 186) argue that an integrated problem-based learning model closely approximates the integrated processes of professional practice and is therefore of particular relevance to 'professional disciplines requiring the synthesis of highly complex issues into simple conceptual ideas for analysis and resolution'. In particular they refer to its employment in the education of integrative practitioners, using the example of architecture to demonstrate its value.

Hybrid models of problem-based learning: Boud and Feletti, (1997, p. 3) comment briefly, and Armstrong (1997, p. 137-150) reports in detail on the application of this second popular model. This approach employs a range of teaching strategies, including lectures, tutorial discussions, laboratory and research work. Whilst on the surface this may not appear dissimilar from traditional approaches, there is an emphasis on presenting conceptually difficult material as interactively as possible. Secondly, lecture material is integrated with laboratory and tutorial activities and, most importantly, there is dedicated time each week for both self-directed and group problem solving sessions where integration of learning across disciplines is facilitated.

Inquiry-based Learning: a common adaptation of problem-based learning that does not start with the assumption that a problem need exist for learning to be effective. Rather it assumes that 'learning may be triggered by *any* experience or simulation' (Feletti, 1993, p. 294). Students involved in inquiry-based learning are encouraged to engage in reflection at all stages of the learning process and from a broader personal attitudinal perspective rather than simply about how well they accessed or analysed new

information. Inquiry-based learning acknowledges that important contextual differences exist in workplace practice across the professions, and that these differences require more eclectic educational responses for focusing learning. Here problem-based learning gives way to a broader, more diffuse approach to inquiry and learning and one that has similarities with ‘action research’ (see McTaggart and Kemmis, 1982; Carr and Kemmis, 1986; McTaggart, 1991; Barnett and Abbatt, 1994; and Field, 1995).

Situation-based learning: curriculum materials of this approach ‘include not only problems to be solved but also situations that need to be explained or managed’ (Tegel and Dockett, 1995, p. 299) in the context of the learners’ professional practice. Rather than focusing solely on problems to be solved, situation-based learning aims to develop student competence and confidence in handling new and unknown situations.

None of these second-generation models satisfies the expectations of the problem-based learning purists. These are educational theorists and teachers who embraced a radical approach to problem-based learning at the time it was being developed, enjoying ever since ‘the exclusivity of association with a limited field, andnow attempt to limit the field of Problem-Based Learning by narrow definition’ (Chen *et al.*, 1995, p. 9). Problem-based learning purists argue that second generation programs are inadequately developed and insufficiently radical in their departure from traditional teaching practice to rightly claim the mantle of Problem-Based Learning.

Drawing attention to the multiple categories of problem-based learning highlights the possible variations that exist in the pedagogical practices of professional educators. These differences result from a combination of factors, namely:

- a) teacher understandings of, and teaching approaches to problem-based learning,
- b) the degree to which problem-based learning is accepted and supported as an educational strategy within the learning institution,
- c) the economic and political influences on program design and delivery, and finally
- d) the influence of industry and their professional accreditation interests.

Each of these factors helps to shape the social, political and economic context within which problem-based curricula are developed and delivered in tertiary institutions.

Importantly, no factor is static throughout the life of a program, nor is one factor completely independent of any other. An overview of the historical development of problem-based learning for professional education helps explain this.

History and Promise of Problem-Based Learning

Commentators on the origins of problem-based learning trace its roots to late 1960's medical education programs of North American Universities such as McMaster (Albanese and Mitchell, 1993, p. 52) and Case Western Reserve (Boud and Feletti, 1997, p. 2-3) and in The Netherlands, Maastricht University (Schmidt, 1983). But it is not clear which of these three Universities can rightly claim to have 'invented' problem-based learning, if indeed any of these medical programs was first to develop this approach to professional education. Howard Barrows of McMaster and Henk Schmidt of Maastricht certainly both wrote prolifically on what problem-based learning is or should be. Once again however, early and prolific writings alone should not be equated with the individual or institutional academic kudos of founding problem-based learning.

The origins of problem-based learning in North America remain, it seems, clouded and contested by institutional egos within the Canadian and United States of America medical programs. Nevertheless, rarely today is any scholarly work written about problem-based learning curriculum design, program delivery or evaluation today without reference to the early work of Neufeld and Barrows (1974) and Barrows and Tamblyn (1980) based on the McMaster University experience. Whilst these publications tend to hinge on their institution and personal experience rather than sound empirical data, they remind the reader of the central reason for shifting from traditional education practices to a problem-based model. Their explanations hone in on the highly pertinent and timely criticisms against traditional medical programs that oblige students to retain vast quantities of clinical knowledge *before* providing them with the opportunity to develop practical skills through clinical experience. This 'front-end' approach to learning is often condemned as:

...an ineffective and inhumane way to prepare students, given the explosion in medical information and new technology, and the rapidly changing demands of future practice (Boud and Feletti, 1997, p. 2).

But questioning the effectiveness of traditional ‘front-end loading’ teaching practices can be traced back to well before the emergence of literature on problem-based learning. Candy (1991, p. 377) for example, cites studies by Cantor (1946) and Gross (1948) as early demonstrations of attempts to counter traditional ‘empty-vessel’ approaches to teaching students through explorations of alternative, self-directed approaches to learning. Later, Rogers’ (1969) critique of the dominant ‘telling mode’ of teaching and Freire’s (1970, p. 53-67) rejection of the ‘banking’ approach to education extends this work. ‘Telling’ and ‘banking’ approaches to education see learners as passive and empty vessels with the educator’s job to fill them up with knowledge, a notion strongly rejected by many contemporary educators and by problem-based learning advocates in particular. Indeed assumptions about the effectiveness of conventional lecture modes of teaching are increasingly being questioned on institution-wide scales. Universities are working more and more with industry partners to produce graduates who can more effectively meet massive and accelerating professional change (Hadgraft and Prpic, 1997, p. 172). Universities, industry and the professions see the development of ‘life-long learning’ capabilities and other ‘key professional competencies’ as essential to professional education programs. The Business/Higher Education Round Table (1992) for example, expects that graduates will have developed competencies in the following five key areas of practice:

- communication skills;
- capacity to learn new skills and procedures;
- capacity for cooperation and teamwork;
- ability to apply knowledge to the workplace;
- capacity to work with minimum supervision’ (Crebbin, 1994, p. 28).

The promise of problem-based learning is that it can develop these generalisable competencies in learners, and more. Engel (1997), for example, lists a definitive set of competencies he believes to be attainable through problem-based learning methods. These competencies, (see Table 2 below), are necessary for every student throughout their professional life, ‘irrespective of the precise branch of the profession in which they come to practise’. Teaching strategies aligned with problem-based learning, he believes, enables these competencies to be attained (Engel, 1997, p. 19). These, along

with a list of underlying principles and objectives of problem-based learning are given below in Table 2.

Importantly, no single characterisation listed in the above Table is exclusive to problem-based learning. Yet combined, they can equip students with skills and strategies for learning how to learn and solve problems in more systematic ways than the conventional teaching approaches they replaced (Boud, 1999, p. 6). This has led to some educators making extraordinary claims for problem-based learning, for example:

...[Problem-based learning] promotes positive attitudes towards learning in targeted areas, enhances learning and self-directed skills, increases student confidence in the subject area being studied, encourages deep thinking, improves problem solving skills and encourages collegial analysis and activity in professional contexts (Gibson and Albion, 1997, p. 159).

ASPECT OF PEDAGOGY		CHARACTERISED BY...	SOURCE
PROBLEM-BASED LEARNING METHOD	Professional Competency	<ul style="list-style-type: none"> ◦ Adapting to and participating in change ◦ Dealing with problems, making reasoned decisions in unfamiliar situations ◦ Reasoning critically and creatively ◦ Adopting a more universal or holistic approach ◦ Practising empathy, appreciating the other person's point of view ◦ Collaborating productively in groups or teams ◦ Identifying own strengths and weaknesses and undertaking appropriate remediation, eg through continuing, self-directed learning 	Engel (1997)
	Objective	<ul style="list-style-type: none"> ◦ Development of problem solving ability ◦ Development of self-directed learning ability ◦ Integrated structuring of learning within the context of the graduate's practice ◦ Encouragement of motivation for learning 	Ryan and Quinn (1995); Barrows (1986); Ryan, (1997a); and Ross, (1997)
	Underlying Principle	<ul style="list-style-type: none"> ◦ Holistic approach to a discipline ◦ Orientation towards professional practice ◦ Integration of knowledge from different domains ◦ Integration of knowledge, skills and attitude ◦ Holistic approach to education ◦ Placement of the responsibility for learning on students ◦ Active acquisition of knowledge and skills ◦ Emphasis on cooperation rather than competition 	Westrik and De Graaff (1995); and Morrow and Kemp (1997)

Table 2: Summary of attributes of problem-based learning.

Saldo *et al.* (1995 in Forrest *et al.*, 1997) state that:

...[problem-based learning] if followed as intended, encompasses all elements for optimum learning (p. 150).

Don Margetson, a well-known proponent of problem-based teaching techniques, places a high value on its ability to mould a better society. In the early 1990's he attempted to

draw links between government-imposed agenda for higher education reform and the dominant paradigm of knowledge and education that existed in Australian higher education in the preceding decades. In his paper, Margetson quite effectively explains how traditional ideas about knowledge resulted in tensions between those in government with a conservative reform agenda, and those with more liberal and opposing views about higher education. He warned against a wholesale return to educational practices that lead to:-

...graduates with a predominantly surface approach to learning [who] would quite naturally continue that approach in their subsequent lives and work, displaying characteristics such as rote learning, uncritical acceptance of beliefs, and an atomistic grasp of fragments of information unrelated to wider understandings (Margetson, 1994, p. 8).

His paper takes a somewhat ambitious, speculative and even romantic turn when he suggests that the question of educational reform would appear very differently if a problem-focused concept of knowledge, understanding and education had been applied across the board in higher education. Developing this point he suggests that:

If problem-based learning had been practised universally in the past, a situation would not have arisen in which the current kinds of educational reform are imagined to be appropriate. For the qualities learned through this form of education would have predisposed government to tackle perceived problems in educational practice, provision, and relation to wider community interests in much more constructive ways than we have in fact seen. Co-operative, critical, constructive, informed investigation, with a more humble and circumspect attitude to findings and decisions, would have been more likely than the one-sided, superficial, and destructive processes pursued with a misplaced assumption of foundational certainty and consequent close-mindedness that have occurred (p. 13-14).

Margetson's paper contains little, if any, evidence of causal connections between the mode of tertiary education experienced by senior government managers, bureaucrats and educational policy makers some ten, twenty or thirty years ago, and their recent responses to political influences and cost cutting in the educational sector.

A Cautionary Note

Despite Margetson's optimistic view of the capabilities of problem-based learning, I reserve the right to be sceptical. I do not believe there is sufficient evidence to suggest

the story of educational reform would be greatly different if those same senior managers had been educated through problem-based teaching methods. Collins (1995, p. 71-97) gives support to this alternative view, crafting a strong argument specifically linking andragogical¹ forms of education with existing institutional and economic agendas. Just as traditional ‘telling modes’ of teaching can be condemned over their tendency to perpetuate dominant forms of knowledge, Collins claims that critical theorists can censure modern adult educationalists for the lack of attention they give to understanding the political, social and historical influences and implications of the learning context. According to critical theorists, androgogical forms of education too can be accused of working:

....to the advantage of management in business and industry, professional organisations and large-scale institutions when the rhetoric of self-directed learning supports a misleading scenario of adult men and women effectively shaping an important dimension of their everyday working lives while, in fact, the attendant methodology places the direction of their learning subtly, but firmly, in the hands of experts who serve predominantly institutionalised interests (Collins, 1991, p. 24).

Collins (1995, p. 89) claims it naive to think that methods of teaching which rely on self-directed learning (see Candy’s lifelong learning (1991); and Knowles’ learning contract, 1990) are exempt from dominant social, political and economic influences of the State or large corporations. This position has significant implications for the practice of adult educators involved in the education of the professions and has a strong bearing on the direction this research now takes. It sets up a challenge to adult educators to reconceptualise notions of andragogy and self-directed learning and to link them to the critical practice of adult education. Such a reconceptualisation would require self-directed, issue-based, experiential and problem-based learning programs under whatever name to take greater account of political considerations and the relevance of social contexts.

¹ Eduard Lindeman first advanced the idea of andragogy in 1927, seeing it as the ‘true method’ of adult learning. But it was Malcolm Knowles who connected the idea to the notion of self-directed learning through his work *The Modern Practice of Adult Education: Andragogy versus Pedagogy* (New York: Associated Press, 1970) and some earlier works. Andragogy, according to Knowles, ‘is based upon the deep insight that the deepest need an adult has is to be treated as an adult, to be treated as a self-directing person, to be treated with respect (1968, p. 351) which is in direct contrast to pedagogy which is characterised by the more teacher-directed approaches of conventional schooling (Collins, 1991, p. 21).

2.4 Problem-Based Learning and Environmental Health Professional Education

There is very little published material on the use of problem-based learning, in the broad sense, as a teaching strategy for the environmental health profession. In Australia there are some 2500 environmental health practitioners and six Universities providing degree level professional qualifications in the field. Compared with the fields of medicine (over 40,000 registered doctors) and nursing (over 115,000 nurse practitioners), environmental health is a relatively small branch of professional practice. In the United Kingdom, the United States of America, and Canada, environmental health professionals make up a similar proportion of the health sector. Problem-based learning may well be used in environmental health education in a number of these countries, however this is not apparent in the literature to date.

Of the few papers on problem-based learning in environmental health education available, three come out of the early experience of the University of Western Sydney (see Ireland, 1981; Ireland, 1985; and Ireland and Powis, 1988). One other publication promotes the suitability of problem-based learning to environmental health professional education in a North American setting (Gist, 1992).

The Hard Ground or the Swamp?

There is little argument that environmental health problems are typically composed of a combination of geophysical, psychosocial, philosophical-ethical, legal and medical components, amongst others, and so can be complex in nature (Anderson, 1987; Kreisel, 1990 and Martin, 1994). But as with many other fields of professional practice, environmental health practitioners tend to understand and respond to complex problems in one of two ways. Schön uses an analogy of the ‘swamp’ and the ‘hard ground’ to help us understand these options.

In the varied topography of professional practice, there is a high, hard ground overlooking the swamp. On the high ground, manageable problems lend themselves to solution through the application of research-based

theory and technique. In the swampy lowland, messy, confusing problems defy technical solution. The irony of this situation is that the problems of the high ground tend to be relatively unimportant to individuals or society at large, however great their technical interest may be, while in the swamp lie the problems of greatest human concern (Schön, 1991, p. 3).

Having drawn our attention to this reality of professional practice, Schön challenges practitioners to resist the temptation to remain on the safe, high ground and instead to engage in an analysis of the messy problems that abound in everyday practice.

Others (see Miller, 1985; Pascale, 1990; and Checkland, 1999) address this same point in the context of professional problem-solving. Miller (1985, p. 4) for example, categorises environmental health problems as either ‘tame’ or ‘wicked’, explaining that tame problems are seen as closed systems which can be effectively bounded and about which there is adequate, unambiguous information. Wicked problems, on the other hand, he believes to be quite different as they represent open systems where not only are they complex, ill-defined and difficult to bound, but the available information is commonly incomplete and ambiguous. In addition, Checkland (1999, p 146) refers to practitioner comfort in deploying hard systems thinking (ie, traditional scientific method) to solve instrumental problems but stresses the need also exists for practitioners to exercise soft systems thinking (ie, eclectic, reflective and critical methods) when tackling the sort of real world situations Schön (1991, p. 4) describes as being ‘typically messy and indeterminate’. Similarly, Pascale (1990, p. 110) refers to problems located in the instrumental domain as being convergent, requiring specialist inquiry and specialist response (most likely by different specialists) and those of the indeterminate zone as divergent problems, requiring a different strategies of inquiry and forms of action.

Schön’s (1983, 1991) work therefore is particularly important in the development of our understanding of reflective practice. In these writings he is both interested in the reflective practice of practitioners as well as what it means to teach students to respond to problematic situations about which little is known. These problems, he claims, lie in the ‘indeterminate zone’ of practice, that is, the zone in which ‘practitioners and critical observers of the professions have come to see with increasing clarity over the past two decades as central to professional practice’ (Schön, 1991, p. 6-7).

An Indeterminate Zone of Practice

There is little doubt that the work of Indigenous practitioners in any professional arena, more commonly than not, is located within the indeterminate zones. Problems that may appear as ‘tame’ to mainstream practitioners may turn into ‘wicked’ problems for Indigenous practitioners both in mainstream and in Indigenous community practice. This raises an important question: What particular forms of knowledge and types of skills would most effectively prepare Indigenous students and practitioners for work in the indeterminate zones? The findings of Thurecht and Vose (1997) with Indigenous Australian students, and Taylor and Burgess (1997) with non-traditional students in the United Kingdom, suggest that the skills described in the literature as distinctive to problem-based learning would be the most useful. They suggest that an independently motivated, self-directed and life-long Indigenous or non-traditional learner acquainted with integrated learning and problem-solving is adequately equipped to take on any problem of professional practice. A more thorough examination of the literature however reveals that this view is poorly informed, being based on a limited and incomplete understanding of the aims, objectives and attributes of standard problem-based learning approaches. Moreover, it does not pick up on the argument that even the most liberal of adult education practices falls some distance short of meeting the needs of the disenfranchised and disadvantaged members of society.

For this inquiry it is more useful to reconsider Weil’s initial research. Her work provides a possible framework for assessing ‘disjuncture’ between Indigenous Australian environmental health students and the curriculum, as well as extending the inquiry into their experiences of the workplace aspects of their professional training. My research therefore differs from previous research in that it does not simply stop at an analysis of the ability of problem-based learning to reduce learner disjuncture. Nor is it a comparative study using the experiences of a new group of Indigenous professional students to compare against the work of Thurescht and Vose or Taylor. Rather the present research seeks to extend previous findings so as to develop an understanding of how disjuncture is experienced in the context of Indigenous Australian professional education. Broadly it seeks to identify:-

- a) *what else* Aboriginal and Torres Strait Islander students might need from a problem-based teaching program? and;
- b) *what beyond* problem-based learning is needed to meet the needs of Indigenous students in a professional educational and professional practice degree program?

CHAPTER THREE – RESEARCHING INDIGENOUS EDUCATION AND PROFESSIONAL PRACTICE

3.1 Research Method

Qualitative questions of the type posed above throw up a wide range of questions as to the appropriate research methods. According to Blaxter, Hughes and Tight, ‘there are many ways of thinking about, and categorising, the wide variety of methods available for designing, carrying out and analysing the results of [qualitative] research’ (1996, p. 50). As a corollary to this, authors of textbooks on qualitative research tend to bring to their work a particular bias or preference for style as well as their own assumptions about what constitutes ‘good’ research design and practice. In attempting to aid researchers design their inquiry process, writers often provide ‘methodological recipes’ for structuring and conducting research. Whilst instruction of this nature can be useful to new researchers, an over-reliance on textbooks which ‘perpetuate a view of research as the following of rules rather than the application of ingenuity to problems arising from particular theoretical interests in certain contexts of inquiry’ (McIntyre, 1998a, p. 163) should be avoided.

Advice on where to start the process of research design, on what must be included in methodological reporting, and in what order it should be presented, is also variable. Guba and Lincoln (1994) for example, have a preference for researchers to locate their work firmly within a research worldview before taking up the more practical issues of approach. For them, ‘questions of method are secondary to questions of paradigm²’ (p.

² Throughout this thesis I use the term ‘paradigm’ in the way described by Carr and Kemmis (1986). They state that “a ‘paradigm’ embodies the particular conceptual framework through which the community of researchers operates

105). Likewise, Denzin and Lincoln (1994, p. 200) expect researchers to give adequate coverage to issues of paradigm before responding to what they consider to be the four basic questions of research design. Their questions are:

1. How will the design connect to the paradigm being used?
2. Who or what will be studied?
3. What strategies of inquiry will be used?
4. What methods or research tools will be used for collecting and analysing empirical materials?

But research design can also be conceived more broadly. In this sense research design is much more than a discussion of method, rather as an ‘entire process of research from conceptualising a problem to writing the narrative’ (Creswell, 1998, p. 2). McIntyre (1996, 1998b) takes a broader view still. He challenges researchers to deploy a range of approaches to deal effectively with procedural descriptions, discussions about research strategy and deeper justifications for the rationale and approach. Recognising there can be tensions between technical, pragmatic and philosophical kinds of discussion, he stresses the need for methodological arguments that ‘bring out a logic of inquiry’ (McIntyre, 1996, p. 1). By logic of inquiry, he is concerned with how researchers explain or justify the research methods and approaches to deal effectively with the problem under investigation. As such he believes it important for discussions of methodology to not only address, but coherently link points of procedure, technique and the application of rule with issues of devising the research plan, designing the inquiry process and envisaging the project. To complete a sound research design, he believes it important that researchers link their method and strategy to a justification of the research approach (in which the guiding assumptions and values of the projects are made explicit), and to wider debates about the nature of research, knowledge generation and paradigm (McIntyre, 1996, p. 6).

Unlike most other writers on methodology, McIntyre is less concerned with the order in which a methodological argument is structured, believing instead that it is more

and in terms of which a particular interpretation of ‘reality’ is generated. It also incorporates models of research, standards, rules of enquiry and a set of techniques and methods, all of which ensure that any theoretical knowledge that is produced will be consistent with the view of reality that the paradigm supports” (p. 72).

important for researchers to cogently justify their reasoned choices about method and approach. Thus he considers it possible for researchers ‘to articulate a ‘logic of inquiry’ that goes from specific procedures to general considerations of approach – or indeed, the reverse’ (McIntyre, 1996, p. 6).

In *‘Arguing for an Interpretive Method’*, he raises a number of useful pointers on avoiding what he considers the many philosophical and practical traps associated with methodological reporting. Central to his work is a concern over the use of loose discussion around paradigm as the basis for methodological choice (McIntyre, 1998a, p. 164). Of significance to my own views on the purpose of research is his assertion that methodology may be more effectively argued from ‘within a given research tradition and its associated theoretical and methodological resources, and *from the particular circumstances and context of inquiry*’ (p. 165, emphasis added), than necessarily, or initially, from a paradigmatic stand point.

I share McIntyre’s preference for methodology being ‘a process constructed by [and for] highly situated understandings’ (1998a, p. 170). In this chapter I explain how the highly located concerns of this inquiry are used to argue and validate choices of method and approach. I deal with the why, how, when and where of the research in the early part of this chapter but in doing so I give particular attention to procedural and ethical points. The modes of inquiry and the means by which empirical material is collected and analysed are then positioned within a broader strategy or tradition of inquiry known as grounded theory. Finally the choice of this particular research tradition is justified within a discussion of wider theoretical and paradigmatic frameworks of knowledge and research.

3.2 Conducting the Inquiry

Starting with the Problem.

The purpose of this study is twofold. Firstly it is concerned with exploring the context of the professional practice of Indigenous environmental health practitioners. Secondly, it is concerned with examining how effective existing education and training is for

practice in that context, specifically environmental health professional education delivered through core problem-based learning subjects at the University of Western Sydney. The research seeks to answer the following questions:

- How do learners experience the professional curriculum and academic experience through the University program?
- How do learners experience the professional development experiences encountered in the workplace?
- How does the design and execution of the degree program by teaching staff both contribute and respond to the issues learners raise through curriculum and workplace experiences?

There are many possible ways to match research questions with methodologies and methods of data collection, but there are some accepted compatibilities. The final choice is dependent upon the emphasis the researcher wishes to place on the topic to be investigated, as well as the form in which the data is available to the researcher to address the topic (Lawler, 1998, p. 77). But before exploring the methods in detail, it is important to identify key methodological issues and assumptions arising out of this inquiry as well as the ways in which they affect decisions of methodology.

Key Assumptions

The key assumptions underpinning this inquiry into cross-cultural professional education were made early in the planning stages. The first assumption was that the research methods and techniques needed to give prominence and respect to the views and professional experiences of Indigenous students enrolled in the degree program. A second assumption was that explicit steps needed to be taken to ensure Indigenous students were not treated as objects of inquiry, but as valued co-researchers. The third assumption was that recognition of the need for research endeavours in this field needed an applied or action agenda, with conscious political intentions oriented toward emancipatory and democratic goals.

It was expected that other assumptions would emerge during the course of the inquiry. It was therefore important that the research design allowed for problem and methods to be continually refined over the period of research and as theory was brought to bear on

the problem. Such an approach requires repeated re-theorising of the core hypothesis (McIntyre, 1998a, p. 167). In this way issues of a highly situated and contextualised nature could be incorporated into the design as they emerged.

Data Collection

Finding a voice

In this inquiry, the primary population under study is an Indigenous student cohort recruited from all over Australia to join the pool of environmental health students at the University of Western Sydney. Research participants from this grouping were 41 Aboriginal and Torres Strait Islander women and men from around Australia working together with the researcher for up to four years. A large proportion of these worked in State government health departments in professional training positions or worked with community councils as environmental health workers, while the remaining worked in unrelated fields or did not have paid employment (see Figure 2 in Chapter One and Appendix 1 for a profile on all 41 students). The educational levels of participants prior to commencement of the degree program are also provided in Figures 5 and 6, and range from completion of secondary education, to low secondary attainment with completion of a community-based certificate training course, to completion of TAFE diploma or tertiary level degree courses. Experience in the field of environmental health prior to enrolment in the degree ranged from 3 to 8 years community-based work to intermittent experience through army reserve involvement, to no prior involvement whatsoever.

In this setting, a key aim of the research was to develop an understanding of the nature of Indigenous environmental health practice and the power relations experienced by its practitioners. A particularly significant imperative for the research design then was to employ data gathering, data analysis and reporting techniques that gave *voice* to the experiences of Aboriginal and Torres Strait Islander environmental health students attached to professional workplace settings.

Traditional survey approaches to data collection would not result in the type of rich and contextual portrayal of student impressions and experiences being sought. Furthermore, as the following sections explain in more detail, I was deliberately aiming to avoid the

use of research approaches that treat individuals as objects of research. In-depth interviewing and mutual discussion were seen as valuable means of gathering detailed information on the views and experiences of the students involved in the research. These were expressly employed in this instance in order to get at the core subjective perceptions, meanings and understandings of the informants. As Minichiello, Sullivan, Greenwood and Axford (1999, p. 396) point out:

The goal of such interviews is to collect detailed and richly textured person-centred information. The purpose is not to gather information as an inventory of objective facts...[r]ather, the emphasis of the interview is to sketch out the subjective nature of people's stories. Here we are not seeking a remembrance of the past as factual events but a subjective interpretation and evaluation of the events as they inform the phenomenon under investigation.

To assist informants in feeling comfortable divulging information about their workplace and about their study program, it seemed highly appropriate that the process of interviewing be as unstructured as possible and that it follow a conversational style of questioning rather than an interrogative style of asking questions. The success of this approach depended on mutual trust. In some earlier work, Minichiello, along with Aroni, Timewell and Alexander (1990, p. 92), made the point that unstructured interviewing dispenses with formal interview schedules and ordering of questions and relies on the social interaction between interviewer and informant to elicit information. By asking as few direct questions as possible the interview approach aimed to generate a highly rich and complex portrayal of the events and circumstances that affect Indigenous students in the workplace and in their studies. This inductive approach acknowledges and emphasises the socially constructed nature of informants' accounts; that they have been created and sustained through social interaction at both the personal and macro level of society (Minichiello, Maddison *et al.*, 1990, p. 396). The challenge for me in analysing these varied accounts of 'work' and 'learning' was to develop a theoretical proposition to link the informant's subjective interpretations of events and thoughts and to identify what they said about the people involved, their situations, perceptions and values. How this particular challenge of analysis was met is discussed later in this chapter.

The interviews themselves usually took place when the researcher visited the students in their placements or communities rather than when the students came to the campus for residential workshops. This was important for two reasons. Firstly, students were able to take me to see their communities and highlight issues that were important to them. The kinds of taped conversation that followed were therefore most often oriented toward the informants' own highly specific settings and situations. The same sort of highly localised and grounded responses may not have emerged if interviews had been held outside of this context. The other reason was not immediately obvious to me but was raised on a few occasions by the informants themselves. A number of students commented on how they valued the opportunity that my visiting them gave for detailed individual discussion on issues of work, family and studying. They mentioned that such opportunities were rarely available when large numbers of students converged on the campus for residential workshops, as their entire attention at that time was dedicated to the workshop activity or examination preparation. Indeed it would have been extremely inappropriate for me to have taken valuable study time away from students for my own research purposes when they came on campus.

Other important points to make about the in-depth interviews relate to the storage and handling of interview data. In attempting to get as clear a picture as possible of the informants workplace context, audio taped accounts of interviews with students, and where possible their workplace supervisors, were transcribed personally by the researcher. Informants were each provided with a hard copy of the transcribed interview to review and approve for use in the research. Additional clarification questions were asked of the participant as the details of the transcription were worked through. Interviews were retained on audio tape and filed. Transcripts were held on computer. A back up copy of the transcripts was made and stored separately and a final hard copy was made available to the interviewee. Hard copies of interviews, along with the original audio tapes and computer discs, remained stored in a locked filing cabinet in the research office when not in use.

Participants as co-learners

The relationship of the researcher to the participants was also identified as central to this inquiry from a very early stage. As such, a second research design imperative was

to ensure that data collection procedures did not treat Indigenous people as objects for study. I have already touched on the inappropriateness of data collection by survey. The small sample size of students involved in this research would lead to problems in statistical analysis. But more importantly, survey approaches do not match the purpose of this research. Budd Hall's critique of the use of survey methods in social science research in developing countries explains exactly why survey approaches have been purposely avoided in this research. Hall (1978, p. 5-8) asserts that survey research methods:-

1. oversimplify social reality and are therefore inaccurate;
2. are often alienating, dominating or oppressive in character;
3. do not provide any easy links to possible subsequent action; and
4. are not consistent with the principles of adult education.

In addition, the presentation of data generated through survey method is often not immediately recognisable, or applicable, or even comprehensible to informants themselves. A number of writers have condemned the broad collective of research practices which, like survey technique, fall within the traditional, positivist paradigm of knowledge generation (see Carr and Kemmis, 1986; Guba and Lincoln, 1994; and Usher and Bryant, 1989). McIntyre, Ardler, Morley-Warner, Solomon and Spindler (1995) capture the particular social, political and ethical dimensions to this critique in the context of educational research involving Aboriginal and Torres Strait Islander peoples:

Indigenous Australians often say they are 'over-researched' because social and medical research has historically treated them as objects for study. Research is often experienced as yet another form of colonisation, where people have little or no control over the form of the research or the uses made of the information. Research can be a means of expropriating Indigenous knowledge and culture for 'white' purposes, however well-intentioned this may appear (McIntyre *et al*, 1995, p. 52).

In this research, I was interested in working with participants in ways that not only assisted me to achieve a good research outcome but also resulted in learning for the participants. Rejecting the idea that students be viewed merely as 'subjects' or 'respondents', the approach adopted here favoured the notion of students as 'informants'. The difference is an important one because the former tends to privilege

the researcher's understanding of the interviewee's accounts while the latter conceptualises participants as informing the interviewer on issues about which he or she has limited knowledge (Minichiello, Maddison, *et al.*, 1999, p. 396). For McIntyre and his colleagues (1995), and others reporting on Aboriginal education and research (see Foley and Flowers, 1990, 1992; McTaggart, 1991; and Marika, Ngurruwutthun and White, 1992), the most appropriate form of research with Indigenous people is participatory. Participatory research can be viewed as an approach to research that generates alternative systems of knowledge to those perpetuated by the dominant and the elite in society. A participatory approach to research aims to elevate:

...the knowledge production systems of ordinary people, those who are deprived and oppressed and under-privileged...[and whose knowledge has historically] been unrecognized, neglected and deligitimized (Tandon, 1988, p. 7).

Elements of this research are consistent with a participatory approach (see Reason, 1994). One-on-one interviews with informants, based on engagement in dialogue rather than a detailed questioning regime were used. Here student informants were as much directing the discussion, and asking questions of my work, as I was of theirs. Discussions were strongly grounded in events and locations immediately relevant to the informants. Individual informant dialogue was used to draw out the highly contextualised experiences and problems students face in their professional work and in their academic studies. There were also group activities and events used in this research for the purposes of data collection as well as for student learning and networking opportunities.

Focus group interviews were conducted with small numbers of students at professional workshops organised by the University off campus (but that were non-compulsory and had no bearing on student progress in the degree), and at other externally organised workshops and conferences. Whilst the primary focus of these gatherings was not for my own research, some time was negotiated with the participants to conduct group interviews specifically in relation to this project. These forums provided a catalyst for students to discuss and create a shared understanding of the complexity of their professional practice. Focus groups in these settings allowed participants to see issues important to them from a range of different perspectives. The group sessions also

enabled students to identify similar points of concern around issues of practice and study. And consistent with the philosophy of participatory research, students could see their individual contributions were valued in the process of developing collective wisdom and collective responses to some of the most pressing issues.

Focus group interviews added another means of collecting data about the same issue. Through this type of data triangulation both convergences *and* counterpatterns in the combined data set could be explored. Group interviews provided a forum in which I could explore more closely the issues that arose out of earlier individual interviews. This gave me a method of clarifying and validating aspects of one-on-one interviews and the opportunity to refine my interpretations. Group interviews in this research enabled me to explore the amount of variation, diversity or consensus on issues of professional education and practice, and enabled me to gain a clearer view of the thinking, language and reality of the informants' worlds (St John, 1999, p. 420).

Changing social and organisational norms

A primary concern of this research project was always to engage in research that openly challenged the status quo of work settings for Indigenous environmental health practitioners, and opened up issues of a more egalitarian social system. In this sense the research project takes on an 'openly ideological' stand (Lather, 1986, p. 63), which must eventually be 'completed in political and social action' (Quantz, 1992, p. 467). Very early into this project it became clear that research involving Indigenous participants needed to assist in developing ways through the problems they were experiencing in their work and community settings. It was important that this research be applied and action-oriented, with conscious political intentions being clearly directed toward emancipatory and democratic goals.

These goals added a 'critical' element to the research design, the nature of which will be fully discussed later in this chapter. But for now, and in the context of this discussion on data collection, three important design features emerged. The first related to the style and intent of discussion between researcher and participants, either in one-on-one or group interviews. The second related to the significance of ensuring an analysis of

the historical dimension of study. The third principal area of concern was to clearly articulate my own role and involvement as the researcher.

In looking at the first of these concerns, that is, the style and intent of the interview process, Carspecken and Apple (1992) identify the need to incorporate data collection procedures that engage participants in discussion or 'dialogue' about their daily lives, work and study, 'in ways that may be new to them and to share in the production of a theory relevant to their lives' (p. 513). For these writers, 'dialogical' forms of data generation are essential to fieldwork if the research is also to develop the research participants. Such interview processes allow participants:-

- some control over the research process;
- to check and alter the researcher's interpretations of data obtained through other means; and
- to articulate features of their experiences, and their feelings, in ways that distance themselves from the structures within which they are frequently embedded – a process that can be empowering to participants and can change the ways they routinely act (Carspecken and Apple, 1992, p. 531).

This approach to data collection builds on my earlier discussion in this section. There I talked of the importance of engaging students in interview processes (both individual and group) which a) clearly brought out the views of Indigenous environmental health practitioners about their workplace, their practice and their professional education; and b) was consciously participatory in nature and treated student informants as co-learners. But it also introduces an approach to data collection that is interested in action and challenging the status quo, both in terms of the way students think and act about their education and their practice *and* in terms of challenging the dominant organisational views and structures within which these activities occur.

Closely linked to the collection of dialogical interview data is the need to incorporate historical perspectives into individual and group discussions. Such an approach legitimises the collection and analysis of historic accounts of both micro and macro events that helped shape the professional and health status of Indigenous peoples in this country. Furthermore, it opens the door for the inclusion of other important data

capable of shedding additional light on the professional and educational fields of practice being investigated. Documents therefore are useful to use alongside other forms of evidence but meaning does not reside in a text, rather in the writing and reading of it. Thus written artifacts are ‘produced under certain material conditions....embedded within social and ideological systems’ (Hodder, 1994, p. 394) and therefore must be interpreted that way. Written documents used as data sources in this inquiry included published and unpublished texts, official and unofficial material in the form of current and historical government reports, agency and professional strategic plans, Aboriginal employment and health strategies and University curriculum documentation.

The final point to raise in this discussion on data collection also relates to intent and approach, and it deals specifically with my own role as researcher. I have already explained my conscious decision to engage in a process of inquiry that aimed to expose and, eventually and where necessary, re-align asymmetrical relations of power between Indigenous environmental health practitioners and the organisational structures within which they work. I have also made some reference to the nature of my involvement with students when I visited and interviewed them in the field and when the students attended the campus. In both instances, students were aware that I was not teaching in the program. In order that I got as clear a picture and develop as good a rapport with students as possible, it was absolutely vital that students identified me as someone standing sufficiently outside the teaching program to understand the sorts of problems students were raising.

This position put me in a new relationship with my University colleagues. I was on the one hand standing back from the delivery of the program, while on the other hand I was actively contributing to individual subject reviews and wider curriculum evaluations. In this work, my concern was to bring out a new perspective on professional education in our curriculum and have staff join me in a critique of our existing problem-based program and its ability to effectively serve the professional needs of all cohorts of students. The following statement sums up what I was attempting to get across to my colleagues.

Education does not stand alone, a neutral instrumentality somehow above the ideological conflicts of the society. Rather, it is deeply implicated in the form of the unequal cultural, economic, and political relations that dominate our society. Education has been a major arena in which dominance is reproduced *and* contested, in which hegemony is partly formed and partly fractured in the creation of the common sense of a people. Thus, to think seriously about education...is also to think just as seriously about power, about the mechanisms through which certain groups assert their vision, beliefs and practices (Carspecken and Apple, 1992, p.509).

My role in the students' workplace setting had similar educative and critical elements. Having practised as an environmental health officer in different levels of government and worked overseas in environmental health development work before taking up this research, I found I was generally well received by supervisors. For the most part, the supervisors and workplace peers of students appeared genuinely interested in Indigenous environmental health developments around Australia but had limited, if any, experience in the area. I found my time with them very quickly turned to discussions of issues and potentially gains at a local level, but that they were also very interested in the complications and advancements being experienced in the field more broadly. As a researcher I travelled to students in all corners of the country and gained a wealth of knowledge on the local issues. I also attended State and National forums in which issues as broad as education and training, career pathways, and Indigenous environmental health policy development were being advanced. Through this broad exposure I was able to position the work of each local trainee within a broader national context. Furthermore, I was able to act as a resource for supervisors interested in connecting with projects and people in other parts of the country. Through all of this work, I aimed to work with supervisors to see their task as not simply the *trainer of* a good Indigenous environmental health officer, but also as someone whom the student would *teach* about working with Indigenous people. Most importantly, I wanted supervisors (along with other professional and office staff) to see and take up the traineeship as an opportunity to *learn together with* students, to explore what this means to their practice in order to bring about sustained improvement in environmental health conditions in Indigenous communities.

Data Sources

Figure 11 illustrates the multiple forms of data sourced and combined in this research.

They include-

- a) participant interviews (students, workplace supervisors, teaching and support staff interviews, etc.) - either tape recorded and transcribed or recorded in field notes;
- b) field visits to students in placements (Western Australia, New South Wales, Queensland and the Northern Territory) and to prospective employing agencies;
- c) document analysis (government policy and strategic plans, profession material, course documents, conference proceedings, etc.); and
- d) observations and insights from professional events (conferences, workshops, taskforces and committees) supporting Indigenous environmental health development.

In the case of student interviews, students were individually invited to join the research as informants. As with all other participants in this research, students were informed both orally and in writing of the scope and nature of their involvement in the research and advised of their right to withdraw, without prejudice, at any time. Before signing a consent form indicating they understood the study and agreed to take part in it, informants were advised about who would have access to the data; how the material was to be collected, recorded, stored and safeguarded; and the identity of those responsible for the research. Students were advised that pseudonyms would be used in all instances of reporting so as to protect their identities.

Participants were interviewed where they felt most comfortable and when it was convenient. Privacy and comfort had to be assured and on numerous occasions students nominated to have their interviews conducted away from the office. Interviews of approximately one hour long were audio-taped. The researcher and interviewee entered into open dialogue about work and study in order for the informant's accounts of working and learning to emerge in an inductive fashion.

Interviews were also conducted with workplace supervisors of some student informants and with University staff involved in the design and teaching of core problem-based learning subjects. These interviews followed a similar discursive format with

informants directing much of the interview. Likewise, these interviews were audio-taped, transcribed and analysed using the same techniques and tools as in the case of student interview data. The information obtained through these interviews was used to draw conclusions about:-

1. supervisor impressions of the professional training of Indigenous trainees, and
2. staff conceptions of problem-based learning.

Interviews with individual academics in the teaching program supplemented data gathered through earlier staff focus group sessions. Observation of teaching activities and review and analysis of historical documentation of the degree program were also undertaken.

Similarly, the data collected from workplace supervisor interviews was combined with field observations of student and supervisor interactions, supervisor involvement in Indigenous environmental health projects, and the analysis of official documents and records pertaining to the various traineeship programs. The purpose of combining recorded interview data with these other forms of data was to ensure a high degree of validity and reliability in the generation of a theory that was grounded in students study and workplace experiences.

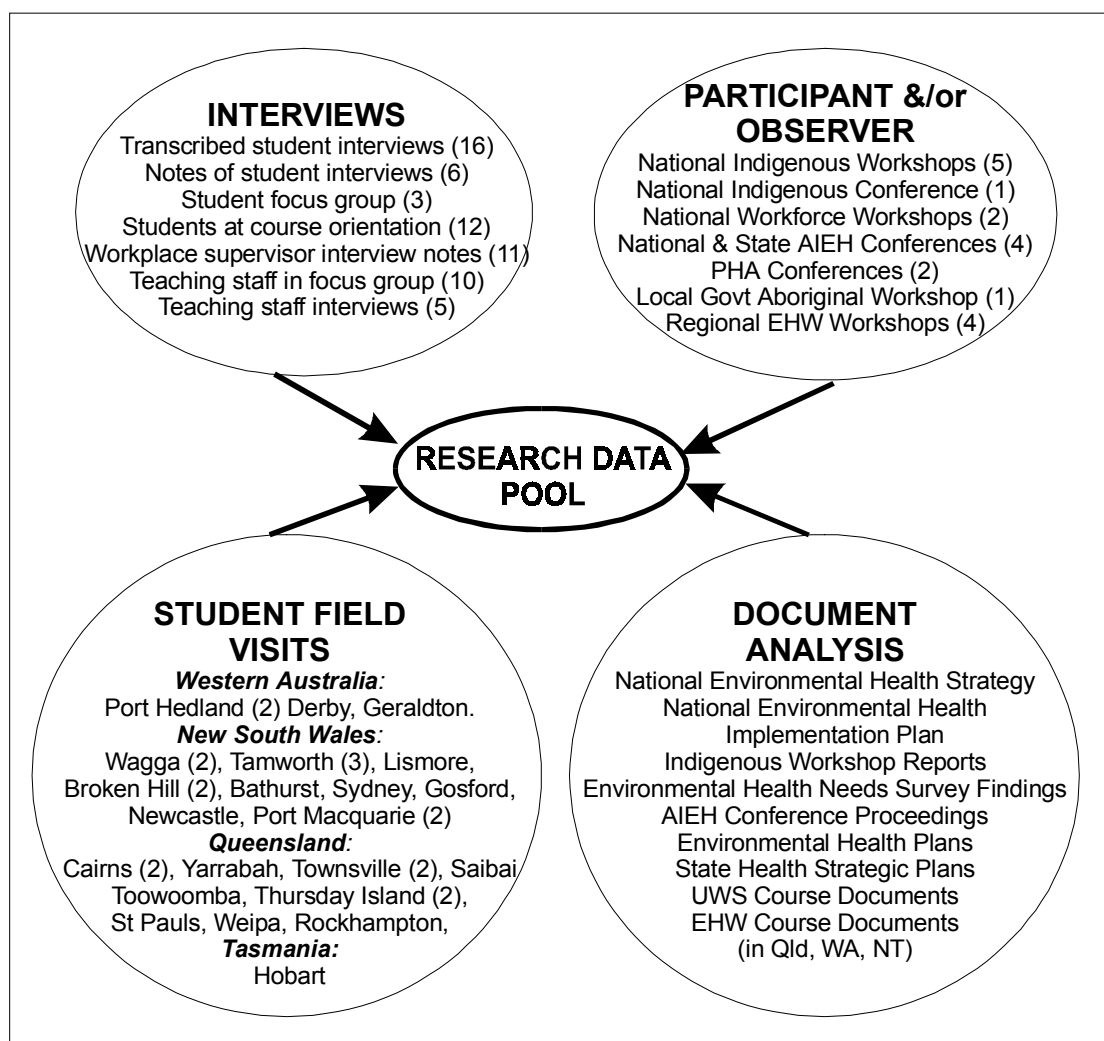


Figure 11: Data sources for the study

Data Analysis

Matching purpose and practice

The analysis of multiple forms of data is common to qualitative research projects. The choice of approach and tools used depends ultimately on the kind of knowledge, understanding and emphases being sought (Creswell, 1998, p. 24). Data analysis techniques are therefore inextricably linked to the specific aims of the project and to the overall approach of the inquiry. In this project, the aims of the analysis phase were to:

1. Explore how learners make meaning of their experiences in the degree program and of their experiences in the workplace;
2. Determine how well the degree program prepares learners to act in ways that benefit Indigenous peoples; and

3. Generate theory that explains the relationships between 1 and 2 above.

The analytical processes used in this research therefore needed to firstly expose how relationships between students and staff, and students and supervisors manifest themselves in student classes and in student work placements. Secondly, they needed to facilitate theorising (Tesch, 1990, p. 85). To this end, data was repeatedly sorted, coded and compared in ways consistent with a grounded theory approach. A critical ethnographic approach to data collection and analysis was also incorporated. In this way the research set out to generate new data *with* the participants of the study. The style of interaction moved beyond one interested in meaning making, to a stage in which participants are deliberately asked to reflect on their lives in ways that may be new to them and to share in the production of a theory relevant to their lives.

Analysis began with open coding, which is the examination of minute sections of text made up of individual words, phrases and sentences (Morrow and Smith, 1995 in Creswell, 1998, p. 302). Open coding can be defined as ‘the process of breaking down, examining, comparing, conceptualizing, and categorizing data’ (Strauss and Corbin, 1990, p. 61) into ‘meaningful units of analysis’ (Bartlett and Payne, 1997, p. 185). Initially, code and category names were determined by the words and issues expressed by participants. Increasingly complex and inclusive categories were developed as the open coding progressed. The process of open coding was followed by axial coding. In axial coding:

The researcher takes the categories of open coding, identifies one as a central phenomenon, and then returns to the database to identify (a) what caused this phenomenon to occur, (b) what strategies or actions actors employed in response to it, (c) what context (specific) and intervening conditions (broad context) influenced the strategies, and (d) what consequences resulted from these strategies. The overall process is one of relating categories of information to the central phenomenon category (Creswell, 1998, p. 239).

Finally, selective coding ensued. This involved:

...selecting the core category, systematically relating it to other categories, validating those relationships [by searching for examples that supported or discounted the relationship], and filling in categories that need[ed] further refinement and development (Strauss and Corbin, 1990, p. 116).

Codes and categories were analysed in this way until ‘saturated’ – that is; ‘until analysis produced no new codes or categories and when all the data were accounted for in the core categories...’ (Morrow and Smith, 1995 in Creswell, 1998, p. 302).

Ensuring validity of research

Whilst traditional modes of establishing validity and reliability in quantitative research are inappropriate for qualitative studies (Browne and Sullivan, 1999, p. 605), two methods are commonly used in qualitative research. They are triangulation and informant feedback. In combating the potential criticism that ‘openly ideological research’ is insufficiently self-reflexive, Lather (1986) stresses the need for even more systematic ways of establishing trustworthiness of data. She emphasises the importance of self-corrective techniques for checking the credibility of data and for minimising the ‘distorting effect of personal bias upon the logic of evidence’ (Lather, 1986, p. 148). Drawing on the work of Guba and Lincoln (1981) and Reason and Rowan (1981), Lather encourages researchers to utilise a range of mechanisms for ensuring data credibility, including triangulation, construct validity, face validity, and catalytic validity. These are discussed individually below.

Triangulation: Research that utilises the concept of triangulation by engaging in multiple methodologies and utilising multiple theoretical schema increases data trustworthiness and exposes both counterpatterns *and* convergences in data. The current research demonstrates triangulation at this level by drawing on elements of grounded theory and critical ethnography in its design and analysis phases.

Construct validity: Ensuring construct validity:

requires a ceaseless confrontation with the experiences of people in their daily lives in order to stymie the tendency to theoretical imposition which is inherent in theoretically guided empirical work (Lather, 1986, p. 150).

In this research, construct validity is developed through analysis work which includes ‘systematised reflexivity’ about the way in which the logic of the data informs and contributes to existing theory.

Face validity: I have previously mentioned how I included strategies in the data collection stage to ensure face validity or ‘member-checks’ (Reason and Rowan, 1981). An example of this includes the group interview process in which I put back to the informants the views and understandings I was developing based on what I had been told and what I had observed. This was for the purposes of clarification and verification. Additionally, at various stages of the analysis phase, a similar round of discussions (individual and group) was held with informants. In these discussions I asked the informants for their opinions of my interpretations and the research findings. This same approach to participant verification was used to gain feedback on the ways in which these interpretations were reported in this piece of work before it was finally put out for assessment.

Catalytic validity: This term refers to:

the degree to which the research process re-orient, focuses, and energizes participants in what Freire terms ‘conscientization,’ knowing reality in order to better transform it (Lather, 1986, p. 150).

Once again however, the measure by which this type of validity can be achieved or is assessed is dependent upon the views of the participants involved toward the end of the research.

Timetable of Activities

A schedule of activities is presented as a time chart in Appendix 2. The figure highlights the events that shaped the researchers’ understanding of (a) the experiences of Indigenous students in their professional studies, and (b) the workplace context of Indigenous environmental health practitioners.

3.3 Justifying the Research Approach

Selecting a Research Tradition

Most researchers would agree that research strategy is determined by the nature of the research question. A strategy of inquiry:

...comprises a bundle of skills, assumptions and practices that researchers employ as they move from their paradigm to the empirical world. Strategies of inquiry put paradigms of interpretation into motion. At the same time, strategies of inquiry connect the researcher to specific methods of collecting and analysing empirical materials...Each...[strategy] is connected to a complex literature; each has a separate history, exemplary works, and preferred ways for putting the strategy into action (Denzin and Lincoln, 1994, p. 14).

A number of traditions exist within the interpretive research paradigm. They include for example, phenomenology, grounded theory, ethnography, case study, and biography, and derivations of these such as ethnomethodology (Morse, 1994 and Creswell, 1998). Each brings to the research its own assumptions and limitations.

For reasons I touched on in the previous section on 'data analysis', I choose to locate my methodological argument within the specific traditions of grounded theory and critical ethnography. In the following pages I examine more closely the key factors influencing the selection of these research strategies and how they combine to meet the needs of the overall objective of this particular inquiry.

Grounded Theory

Grounded theory has been identified by Tesch (1990, p. 72), Morse (1994, p. 224) and Denzin and Lincoln (1994, p. 12) as a research strategy of significant importance to the naturalistic inquirer. Its co-founders, Barney Glaser and Anselm Strauss, view grounded theory as being concerned with 'the discovery of theory from data systematically obtained from social research' (Glaser and Strauss, 1967, p. 2). Llewellyn (1997, p. 28) locates grounded theory firmly in Blumer's (1969) discourse on symbolic interactionism. As Llewellyn explains it, Blumer held that human beings need to interpret their social world in order to act. Accordingly, for symbolic interactionists, 'reality is known through human perception of this social world and as such can only be discovered by empirically examining the world' (Llewellyn, 1997, p. 28). Researchers who align with this perspective typically employ a two-pronged approach to their inquiry. Firstly they aim to gain as close an association as possible with the group under study in order to assemble a comprehensive and accurate picture of their situation. Secondly they search for the systematic relationships from which theory may be created about the group, behaviour or phenomenon under study.

In grounded theory these two components, gathering the ‘complete picture’ and generating theoretical propositions from this data, are intimately inter-related. They occur concurrently and sequentially throughout the course of the research. The main goal of grounded theory is to develop a conceptualisation of interrelationships inductively derived and systematically verified through on-going analysis. The purposeful systematic generation of theory occurs through simultaneous collection, coding and analysis of data (Llewellyn, 1997, p. 28).

As an element of naturalistic inquiry, the grounded theory approach then ‘uses a **systematic** set of **procedures** to **develop** an inductively derived grounded **theory** about a **phenomenon**’ (Strauss and Corbin, 1990, p. 24, their emphasis). This key feature of grounded theory is strongly linked to the notion of ‘analytical induction’, a concept developed by Florian Znaniecki in the late 1920’s and advanced over the decades by Herbert Blumer, Alfred Lindesmith and Donald Cressey respectively (Hammersley, 1989, p. 163). Useful to this discussion is Hammersley’s schema of the process of analytic induction (Figure 12) in which causation is systematically brought to the fore through repeated analysis of semi-closed systems.

In a similar way, grounded theory is concerned with theory generated *from* data, rather than theory that *precedes* data. While the latter is associated with the approach given to conventional modes of inquiry, grounded theory:-

...is a necessary consequence of the naturalistic paradigm that posits multiple realities and makes transferability dependent on local contextual factors. No *a priori* theory could anticipate the many realities that the inquirer will inevitably encounter in the field, nor encompass the many factors that make a difference at the micro (local) level (Lincoln and Guba, 1985, p. 204-5).

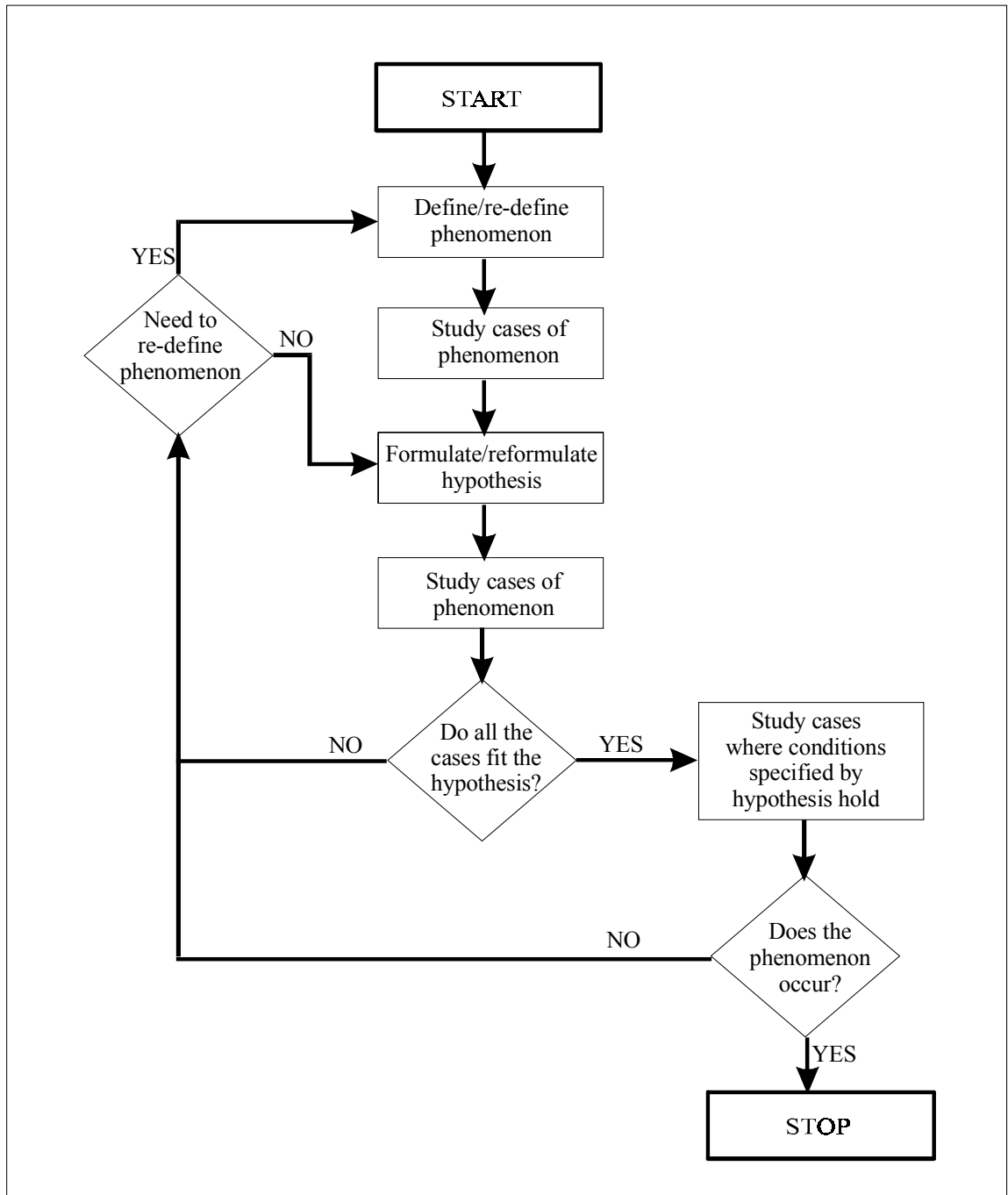


Figure 12: The process of analytic induction (Hammersley, 1989, p. 197)

The grounded theory approach is a general methodology of analysis linked with data collection that uses a systematically applied set of methods to generate an inductive theory about a substantive area (Glaser, 1992, p. 16). In essence, this approach requires the researcher to suspend all prior theoretical notions while collecting data relevant to a particular sociological problem area. Unlike traditional research approaches beginning with theory, the grounded theory approach begins with a specific research problem and allows the relevant detail, and subsequent theoretical explanations, to emerge from the

inquiry (Strauss and Corbin, 1990, p. 23). Only after each series of data is collected is the researcher permitted to inspect it to discover whether any theory can be developed directly from the patterns found in the data (Tesch, 1990, p. 23). An advantage of conducting research in this fashion is that it allows for:

...every piece of data to be constantly compared with every other piece in order to discover the dominant social process that characterises the phenomenon under study (Fawcett and Downs, 1992, p. 8).

This approach is consistent with the research goals of this inquiry in that it is particularly interested in gaining insights into the context of the professional practice of Indigenous environmental health practitioners through the views and experiences of the practitioners themselves. Grounded theory is highly suited to research where:

...the focus is on the individual's statements and actions regarding patterns, inconsistencies, intended and unintended consequences of action, meaning systems, assumptions that people hold, and social systems and interactions that are part of behavior (Ebaugh, 1988, p. 30).

From a conceptual point of view, a grounded theory approach was particularly helpful in this research for three key reasons. Firstly, the approach allowed me to explore the phenomenon of Indigenous environmental health professional practice and education both in depth, and with a considerable amount of flexibility and freedom. Secondly, it allowed me to pursue questions for professional education and practice that had previously not been addressed adequately in contemporary professional education literature. The following underlying assumption of grounded theory applied to this research:

...all of the concepts pertaining to a given phenomenon have not yet been identified, at least not in this particular population or place; or if so, then the relationships between the concepts are poorly understood or conceptually undeveloped (Strauss and Corbin, 1990, p. 37).

Thirdly, the grounded theory approach enabled me to commence the inquiry processes with broad research questions only. These questions were initially formed around key areas of concern identified in the early stages of the inquiry. Grounded theory allowed me to progressively refine and focus these questions during the research process, as

concepts develop and their relationships are discovered to be relevant or irrelevant (Strauss and Corbin, 1990, p. 38).

The adoption of a grounded theory approach proved useful for a number of other reasons. Various literature sources indicate that grounded theory enables:-

- **multiple forms of data to be readily managed and integrated:** Data collection methods such as in-depth interviewing, participant observation, memoing, and diary accounts can each be applied in the case of grounded theory research (Morse, 1994, p. 225; Higgs, 1998, p. 147; Lawler, 1998, p. 75). Importantly, theoretical sampling can be done across several data sources with analysis beginning with the raw data and proceeding to increasingly higher levels of abstraction until theory is generated (Llewellyn, 1997, p. 29).
- **data to be gathered and analysed over a period of time:** constant interplay occurs between the various levels of analysis so that each mutually effects and validates the other over time (Llewellyn, 1997, p. 28).
- **relatively low numbers of participants may be involved:** Morse (1994, p. 225) points out that sample sizes of approximately 30-50 participants may be suitable for research based on the grounded theory approach. Large quantities of coded data can result from such numbers (particularly if numerous modes of inquiry are involved) prompting Glaser (1992) to promote the use of grounded theory by researchers interested in inductively generating theory through qualitative analysis of qualitative and/or quantitative data.
- **primary sources of data may be generated from natural settings:** rather than relying exclusively on statistical surveys and social experimentation, the grounded theory approach attempts to view the social world in its 'natural state' (Tesch, 1990, p. 24). This enables the researcher to privilege the understandings and experiences of individuals involved in the study and for the researcher to permit the emergence of theory through an inductive and interpretive mode of inquiry. Secondly, as

theory is being grounded in real life data, it ensures the applicability of theory to practice.

These features of grounded theory make it a useful tradition from which to research 'power' and 'power-relations'. However according to Layder (1993, p. 59), the fact that researchers employing grounded theory often deal with the subject of power in a highly situated way, can be a limitation. Whilst revealing the important 'micro' dimension of power relations can be vitally important for the research and for those involved, Layder (1993, p. 59-60) contends that:-

...the situated focus deflects attention away from questions concerning how collective power resources...are possessed and distributed unequally and 'stored', as it were, in institutional and organizational containers... To narrow one's focus to the manner in which particular power holders exercise power over others in particular situations ignores the nature of the social conditions which underpin, and secure, control over collective power resources. It also overlooks the way in which relations of power between groups based on the ownership or possession of various resources are reproduced over time and establish the conditions which enable particular individuals to exercise power.

Layder's desire is therefore to see grounded theory break away from its primary focus on micro phenomenon, and to analyse the macro structural influences on the behaviour and interaction of those observed. A wider analysis such as this would also include an historical and broader social dimension.

Critical Ethnography

Ethnography can be defined as an analytic description of a cultural scene where the shared beliefs and behaviours of a group of people are re-created (Goetz and LeCompte, 1984, p. 2). It is both interested in producing a detailed analytic description of events, phenomenon or world view under investigation, and harnessing specific investigative techniques that assist with a reliable re-creation. Good ethnographic research, according to Goetz and LeCompte (1984, p. 3), should therefore be characterised by four things: recorded material being representative of the participants' world view; research taking place in the real-world setting; the various contexts and the situational complexity being well documented; and a variety of research techniques being used to amass data. A major limitation of this traditional ethnography to my own research

however is its desire to ‘avoid purposive manipulation of variables in the study’ (Goetz and LeCompte, p. 3). Here traditional ethnography tends toward a humanist view of power and knowledge, focusing on the here and now and ‘rather trivial aspects of society and social life to the exclusion of the more important and enduring aspects’ (Layder, 1993, p. 66).

A critical approach to ethnography takes up Layder’s concerns for an analysis of both the micro and the macro structures of power. The critical tradition makes assumptions about the nature of knowledge, power and research. The usefulness of applying a critical ethnographic approach here is that it begins the process of inquiry with the collection of data and with attention to the same criteria for ‘trustworthiness’ as other forms of qualitative data (Carspecken and Apple, 1992, p. 511). But the motivation of the researcher and the questions that are posed typically set critical ethnographic research aside from other qualitative forms of inquiry. In essence, critical researchers are concerned with using their projects of inquiry to aid in struggles against inequality and domination.

For these reasons, the real distinguishing feature of the data collection phases does not consist of the *methods* employed, but rather, the epistemological status of the data produced (Carspecken and Apple, 1992, p. 513). Many qualitative approaches to data generation aim to produce evidence that simply describes experiences or explains phenomena and typically these approaches are not interested in challenging the situation or the thinking of those perpetuating the system under investigation. In a critical ethnographic study however, researchers respond to the wishes and actions of participants.

Through their work, critical ethnographers aim to give voice to those who have previously been silenced by allowing others to describe, interpret and explain their perspectives of their world to wider audiences. A critical researcher is one who attempts to:-

...use his or her work as a form of social or cultural criticism and who accepts certain basic assumptions: that all thought is fundamentally mediated by power relations that are historically and socially constituted; that facts can never be isolated from the domain of values or removed from

some form of ideological inscription; that the relationship between concept and object...is never stable or fixed and is often mediated by...social relations;...that certain groups in any society are privileged over others and, although the reason for this privileging may vary widely, the oppression that characterizes contemporary societies is most forcibly reproduced when subordinates accept their social status as natural, necessary, or inevitable; that oppression has many faces and that focusing on only one at the expense of others often elides the interconnections among them; that mainstream research practices are generally, although most often unwittingly, implicated in the reproduction of systems of class race and gender oppression (Kincheloe and McLaren, 1994, p. 139-140).

Using a critical ethnographic approach to data collection and data analysis, this research aims to generate new data *with* the participants of the study. The style of interaction moves beyond one interested in meaning making, to one where participants are deliberately asked to reflect on their lives in ways that may be new to them and to share in the production of a theory relevant to their lives.

3.4 Positioning the Research

At the beginning of this chapter, I explained how I elected to present the methods and approach taken in this research and that I intended to ‘work from the problem out’. Along the way, I pointed out how choices in procedure and technique were linked to the guiding assumptions and values of the project, and how they combined to influence the strategy of inquiry. I have, at times, also referred to this inquiry process as a ‘qualitative’ research endeavour, incorporating elements of research theory and practice consistent with both ‘interpretive’ and ‘critical’ approaches to research. This discussion has largely taken place without detailed explanation of the meaning of these terms or elucidation on how they relate to this particular project. Over these final pages of the chapter, I highlight the key features and objectives of qualitative research and draw out specific elements in my own inquiry that account for it being both interpretive and critical in nature.

Qualitative research

In qualitative research there are five major assumptions concerning the construction and nature of knowledge, each of which is antithetical to traditional scientific and

quantitative approaches. According to Higgs and Cant (1998, p. 2) qualitative research is typically bound within the following assumptions:

1. there are multiple constructed realities (i.e. different people have different perceptions of their reality through their attribution of meaning to events, meaning being part of the event and not separate from it)
2. the process of inquiry changes both the investigator and the subject/participant (i.e. these players are interdependent as opposed to the independence ascribed to the research and the researcher in quantitative methods)
3. knowledge is both context and time dependent. While quantitative research searches for generalisations and universal truths, qualitative research searches for a deep understanding of the particular
4. it is more useful to describe and interpret events than to control them (as in quantitative research) to establish cause and effect
5. inquiry is 'value-bound'. Values appear, for instance, in how questions are asked and how results are interpreted.

The focus of a qualitative research project may vary depending on the degree to which the inquiry is interested in: the experience of events (phenomena) or meaning making; social constructions, social rules, sense making and sociocultural systems; identity, sense of self, selfhood, social interactions; or discourses, power and ways of knowing Lawler (1998, p. 71). As with this research endeavour, the choice of research strategy was determined by the nature of the problem under investigation. The preceding sections explain how the approach to this research was developed out of a combination of traditions of inquiry – grounded theory and critical ethnography – because they each contributed techniques, assumptions and practices that helped to respond to the particular aims of the project.

Considering paradigm

But whilst both grounded theory and critical ethnography fall within a range of qualitative research traditions (Carspecken and Apple, 1992; and Higgs and Cant, 1998), it is important to recognise they originate out of differing paradigms of thought. Paradigm is 'more than the philosophical preference for one research methodology over another' (McIntyre 1995, p. 124). It is a 'basic belief system or worldview that guides

the investigator, not only in choices of method but in ontologically³ and epistemologically⁴ fundamental ways' (Lincoln and Guba, 1994, p. 105). Paradigm acts as a most deep-seated influence governing the entire approach taken to research (Creswell, 1998, p. 74).

A 'paradigm' embodies the particular conceptual framework through which the community of researchers operates and in terms of which a particular interpretation of 'reality' is generated. It also incorporates models of research, standards, rules of enquiry and a set of techniques and methods, all of which ensure that any theoretical knowledge that is produced will be consistent with the view of reality that the paradigm supports (Carr and Kemmis, 1986, p. 72).

This view of paradigm grew out of the much earlier and highly influential work of Thomas Kuhn (1962) entitled *The Structure of Scientific Revolutions*. Kuhn wrestled with the concept that each scientific community has its own particular way of viewing what constitutes a scientific problem and, similarly, has agreement on what might be the most appropriate way of dealing with the nominated problem (Ritchie, 1995, p. 63). Kuhn used the term paradigm to describe the collective views of these different scientific communities that he saw as being 'incommensurable' with each other. However, as Foley (1995b, p. 16) points out, Kuhn's notion of paradigm was quickly taken up by social scientists, who argued that a number of competing paradigms can exist at the same time.

Paradigms of research in general (Carr and Kemmis, 1986; Higgs and Llewellyn, 1998; and Higgs, 1998) and in adult education research specifically (Foley, 1995 and McIntyre, 1995) can be grouped in the following way:

- Positivist Research Paradigm (variously named as the either the natural science, empirico-analytical dominant, traditional, or classical paradigm);
- Interpretive Research Paradigm (otherwise known as the communicative, alternative, naturalistic, or humanistic paradigm); and

³ In philosophy, ontology refers to the study of questions of what exists, what is the nature of being, what is the nature of the world and what is reality (Higgs, 1998:137).

⁴ Epistemology is a branch of philosophy dealing with the study of knowledge, or ways of knowing the world (Higgs, 1998:137).

- Critical Research Paradigm (sometimes referred to as the emancipatory, transformative, radical or liberatory paradigm).

On a number of occasions throughout this chapter, I have rejected the application of research techniques, approaches and ways of thinking consistent with a positivist worldview. By positivist, I refer to the traditional empirico-analytical process of inquiry and its supportive data collection mechanisms that come out of the natural sciences. Hesse (1980, p. 170-171) points out that in the positivist paradigm:

- experience is taken to be objective, testable, and independent of theoretical explanation...
- theories are artificial constructions or models, yielding explanation in the sense of a logic of hypothetico-deduction...
- the lawlike relations asserted of experience are external, both to the objects connected and to the investigator, since they are merely correlational...
- the language of natural science is exact, formalizable, and literal; therefore meanings are univocal, and a problem of meaning arises only in the application of universal categories to particulars...
- meanings in natural science are separate from facts.

Suffice to say that the limitations of these assumptions made the positivist paradigm inappropriate to this research. As mentioned at the outset of this chapter an entirely different set of assumptions about knowledge, participant involvement and researcher interest were at play in this research. These were based on interpretive and critical approaches to inquiry.

Interpretive and Critical Inquiry

This research is an example of how both interpretive and critical modes of inquiry can be combined to explore meaning and promote action and change. The research is *interpretive* because it is interested in how Indigenous students make meaning of the situations, events and circumstances in their work and through their professional education. The research gains strength from employing an interpretive approach, through its ability to develop participant meaning; to adjust to new and changing

conditions over time; to adjust to new theories as they emerge; and to contribute to the evolution of new theories.

In the context of research with Indigenous participants, McIntyre, Ardler, Morley-Warner, Solomon and Spindler (1995) found that interpretive approaches can be effectively used to:

interpret and represent the social and cultural meanings Aboriginal and Torres Strait Islander peoples give to their participation [in courses of study], allowing Aboriginal voices to ‘come through’ in a thematic analysis of interview material (McIntyre *et al.* 1995, p.52).

The research is *critical* firstly because it locates the way these Indigenous practitioners and students make meaning in an analysis of power relations. Second, the research aims to promote a new understanding within participants on how to transform the current structures, relationships and conditions (Higgs and Cant, 1998, p. 4) that constrain development and reform. Finally, as the following two chapters illustrate, the research incorporates an analysis of the social and historical constructions that affect the way Indigenous peoples are viewed in both the University program, and the workplace traineeship and environmental health profession.

CHAPTER FOUR – STUDENT EXPERIENCES IN A PROFESSIONAL CURRICULUM

4.1 Introduction

This chapter presents a detailed analysis of the experiences and problems of Aboriginal and Torres Strait Islander students in the Bachelor of Applied Science (Environmental Health) at University of Western Sydney. The chapter initially explores how Indigenous participants responded to the degree program in its entirety. It then presents a detailed account of the experiences of the relationship of students to the problem-

based learning core curriculum. The investigation and analysis here draws upon a series of interviews with students over the period of 1997 to 2000 and includes the views and contributions of students who discontinued in the program. It also draws on data from staff focus group sessions along with interview data from individual staff involved in the development and teaching of the program.

4.2 Overview of Program Experiences

Student Reaction to Overall Course

Pathways of entry into the course and educational attainment of learners prior to taking up the degree provide interesting background to an assessment of student experiences in the curriculum (see Figures 2, 3, 5 and 6, and Appendix 1). Only one student for example came to the degree immediately after completing secondary school. Another student commenced his traineeship and the course twelve months after finishing his Higher School Certificate (HSC) after transferring from another university. In the main however, the average time between completing school and commencing the degree for NSW Health trainees was 4-6 years. For community-based practitioners taking up the course, the time lapse between secondary school and university was between 10 and 20 years. A common concern of many interviewees therefore related to the idea of returning to studies.

As already explained, many students involved in this research, entered the degree having successfully completed one of the three TAFE Certificate or Diploma courses in community environmental health. The transition from TAFE to university proved difficult for many. Discussions with students on this aspect of returning to studies revealed features of their previous educational programs and experiences that presented challenges for both the learner and this University to overcome. One student for example found he had difficulty adhering to the stricter timelines for assignment submission set by the University, when compared to his TAFE experience.

Probably the main thing that I have picked up on the difference...is the time thing... You know now I've got a certain time to do my assignments,

a certain number of weeks to complete them. I'm still getting used to having that time frame...on assignments (ROI #19).

Another student who came to the degree in his early 30's having left school in year 10 set his sights on doing professional studies. This student had previously worked in a variety of labouring and short term technical positions, tried his hand in the armed forces, and then worked as a field assistant on a program mapping Aboriginal sites in and around urban areas of a capital city. He had been encouraged by family members to apply for university courses in his home town, but before commencing any degree program, this students wanted to ensure he was prepared. In an interview he stated:

I thought I'm not going to go to Uni straight away because it's been fourteen years since I even tried studying and there was no way I was going to be ready for it. So I thought 'the Tertiary Prep[aration] Course at TAFE has got to be the way to do it first' (ROI #10).

In other cases, students who had finished secondary schooling but had not taken up tertiary studies, opted to take up training in the armed forces or a police department, or to take up club football contracts with major league clubs in capital cities. The difficulties this group faced in returning to studies not only related to the expectation of the University, but also their ability to re-establish effective study practices and skills. One student expressed such concern in the following succinct way:-

The hardest thing is readapting to...a good study and work ethic...(ROI #8).

Whatever the pathway to the degree, every student expressed some degree of apprehension about returning to studies. Some students had every right to feel under-prepared. Interviews revealed instances where the quality of previous formal training had been compromised by teaching staff doing large amounts of work for students. One student felt that this sort of teacher interaction at the feeder institution contributed significantly to the withdrawal of many of his peers early into their degree studies.

One of the biggest problems I have found in [previous courses] is some of the students were given too much flexibility at times... The biggest problem is the teachers are doing [the work] for them [and] these students have been passed. What happens when they go back to the community and they are told to do a submission? What happens then? They have no

knowledge of doing it because the teachers always done it for them...(ROI #18).

University of Western Sydney staff were already familiar with the work of McDaniel and Flowers (1995) which explored the many ways that even well-meaning teaching and program staff risked devaluing the learning experience for Indigenous students. By compromising on the quality of education these teachers also jeopardised the credibility of their own awards and risked the wider reputation of their training institution. Indeed, one reason the University insisted on research funds accompanying the first intake of Indigenous students into its mainstream environmental health degree program was to ensure it was in a position to accommodate any emergent learning needs of the cohort. We have already established that a large number of Indigenous students in the program came to the degree from non-standard academic backgrounds (see Figures 3, 5 and 6) and that this is consistent with many other Indigenous students in tertiary education (Barnes, 2000). Many had left school without completing Year 12 and worked their way into Environmental Health Worker positions in communities. Anticipating that students of community-based courses would experience some difficulty making the transition to professional tertiary education, the University put in place measures to assist Indigenous students of non-standard academic background to reach the same academic standards and outcome as all other students. In some cases this meant:

- developing and delivering pre-enrolment study skills workshops that introduced students to the program, explained the University's expectations and identified where on-going tuition would be required;
- arranging occasional additional group tutorials in subject areas while students were on-campus. These, combined with pre-exam tutorials have proved very useful for students, particularly for students in the early stages of their study program; and
- providing a local tutor for students in their place of work or their home community.

Whilst most students utilised every one of these forms of assistance, a few did not. These practical measures aimed to elevate the academic ability of students and provide them with conditions and resources to ultimately maintain the level on their own accord. From the outset therefore the academic assistance given to Indigenous students was not intended to give special dispensations or waive minimum academic standards. Rather it was designed to develop academic rigour in students' work and build the independence

and confidence required of learners to meet the academic expectations of the University.

Interviews with students revealed instances where employing agencies recruited trainees even though the student's eligibility for tertiary studies was questionable. Not all employers fully understood the admission requirements for the degree. Without either a representative from central office or the University program involved in the recruitment process, some trainees were appointed without the necessary academic background for tertiary studies. By automatically accepting the employer's nomination the University was, for a short time, an unwitting partner in this unsatisfactory recruitment process. Learning from this experience, in subsequent years, program staff of the University made themselves available to the employing office across every stage of the trainee recruitment process. But for some, the damage had already been done. The level of anxiety and personal disjuncture felt by one such a student was so significant that it was both paralysing...

I was finding myself under pressure which I suppose is what study's all about...[but] doing assignments was hard. The fact that I had to write an assignment and I didn't really know how to do those things made it impossible for me to go on (ROI #2).

When I found out what they wanted from me, the hard bit was getting motivated to getting down and doing it I always used to leave it to the last week or whatever before starting work on it (ROI #2).

...and demoralising:

I feel sort of that I'm letting you people down but I know that I can't study because I can't do it (ROI #2).

The student resigned from the training position and withdrew from the program after not progressing in any of the first two semesters' subjects. The tendency of the program to attract a number of students who were not necessarily equipped for tertiary level learning was later noted in the program evaluation. In her report, Druett (2001, p. 65) concluded that the concept of independent studying was problematic for some Indigenous students coming from remote areas. When compared with their peers in

more accessible mainstream locations, this group tended to come to the course “cold” because of their limited or non-existent tertiary or TAFE experience.

But the program was successful in attracting others who had travelled a long but steady path through one or more TAFE level community-based courses prior to enrolling in the degree. For them, entering and progressing in the degree was representative of the fruits of their hard labour and therefore was seen as a natural progression.

When we went through the certificate course, we thought that was hard, then you went to the associate diploma and then the advanced diploma. That really set you up so that when you went into the degree, it just fell into place (ROI #18).

The diploma at TAFE it's more like out in the field working with your water and your sewerage. With the step up with my work, [and moving] up from [community-based] environmental health worker into a [regional] position, I'd say that the university level...matches my job as a coordinator now. Because, I think the TAFE course is made for environmental health workers, [and the degree helps you] step up and go to coordinator and later on to an officer (ROI #19).

Student anxiety was counterbalanced by anticipation for most commencing students. Looking back on their own progression some participants talked of improvements in their academic ability as they settled into the program, a feature corroborated by the reduced percentage of abandoned elective subjects from the second year of the program onwards (see Figure 7).

I'm just comparing the [assignment] I did for TAFE...probably about a year ago and the one I just completed now for uni. And just looking at them...you could see straight out that...I improved a lot. By just looking at the one I did for uni, I can see a big difference. So I guess I can use that to say...TAFE sort of prepares us (ROI #19).

The degree to which students were prepared for degree studies by their prior educational experiences strongly influenced how well they ultimately performed at University. As any educator engaged in Indigenous education could testify, a host of personal and family commitments combine regularly with cultural obligations to take Aboriginal and Torres Strait Islander learners away from their academic studies (see

Williams and Cadet-James, 2000 and Wakerman *et al.*, 2000). This cohort of Indigenous students was no different in this respect (see Druett, 2001, p. 59).

But as students undertaking a professional degree program through a distance education mode, while working at the same time in community or for government, additional pressures were experienced. Indigenous environmental health students in this study often felt pressured to forego their academic studies in order to meet high work demands and/or community obligations. Wakerman, *et al.* (2000) drew attention to the significance of these combined pressures for Indigenous professionals in research they conducted into the experiences of Aboriginal and Torres Strait Islander health managers. Needless to say, workplace pressures on even junior Aboriginal and Torres Strait Islander people impacted on student performance. In the case of Indigenous environmental health practitioners who also travelled extensively for their work, these pressures presented significant additional challenges to both their study and work performance.

The general issues raised by students here with respect to the whole degree program set the scene for a more thorough analysis of student experiences in the problem-based core subjects. Firstly however, an assessment of the core subjects will be undertaken to determine just what makes them problem-based.

Doing Problem-Based Learning

In a literature analysis in Chapter Two, I made the point that the use of problems as the driver for organising subjects allowed for many different applications in course delivery and teaching approach. Having said that, it is equally important I re-state that educators of problem-based courses and subjects share a set of guiding principles for organising and developing problem-based learning curriculum. It is therefore important that I now position the University of Western Sydney environmental health core curriculum against these generally agreed principles and objectives.

Meeting problem-based learning requirements

There was evidence in student interviews to illustrate that core subjects in the University of Western Sydney environmental health degree adhered to the principles of

problem-based learning described by Westrik and De Graaff (1995, p. 191) and Morrow and Kemp (1997, p. 408). Broadly speaking, these principles are concerned with core environmental health subjects presenting a holistic approach to education and to learning and the orienting of learning toward professional practice. Further, the principles of problem-based learning anticipate students will integrate knowledge from different domains; actively acquire and integrate knowledge, skills and attitude; engage in both individual and small cooperative groups processes; and take responsibility for learning.

There was also evidence in records of student interviews to clearly demonstrate core subjects challenged students to meet each of the *objectives* of problem-based learning listed in Table 2. The following section illustrates how Indigenous students in this research saw the objectives of problem-based learning being met in the core subjects.

Knowledge structured in the context of practice

With the exception of only two of the students interviewed for this study, all were studying while in full-time employment in the field of environmental health. All studied by distance education. Six core subjects of the degree were written for circumstances where students worked in the professional field at the same time as they studied through distance education. Core subjects required external studies students to develop and undertake their assignments within a particular biophysical and social setting. Students who worked in the field of their study were encouraged to ground their learning in their practice and in most instances chose to locate their examples within the geographical boundaries in which they lived and worked.

Each of the six core subjects in the program used a different theme of inquiry to develop an array of professional knowledge and technical skills. Whilst the order in which core subjects were offered varied over time, the six subjects included:-

- Environment and Community Studies
- Terrestrial Environment Management
- Aquatic Environment Management
- Environmental Health Issues and Change
- Environmental Health in Practice I and

◦ Environmental Health in Practice II

In the core subject Environment and Community Studies for example, students are required to:

...investigate the inextricable link between human health and the environment in its broadest sense. Focusing on a selected study community of your choice, you will study its demographic profile, document environmental issues impacting upon the community, undertake a social survey and profile of a local community action group' (University of Western Sydney, Hawkesbury, 1999, p. 8).

The subject was designed and presented to enable students to investigate the major physical, visual, sociological and political factors that affect the health and quality of life of a selected community. Students were expected to gather primary and secondary data, analyse the data and report on their findings. In later core subjects the attention shifts to the development of a range of other practice relevant skills and knowledge, such as the ability to analyse the impact of urban development or rural activities on a freshwater ecosystems, predict subsequent implications for human health, and recommend remedial actions to improve the situation.

In addition to the development of new knowledge and skills, core subjects required the *integration* of relevant skills and knowledge from a host of other technical and specialist professional areas being studied either prior to, or in concert with, the core subject. Biological, chemical and human sciences, health statistics, toxicology, legal studies, building design, urban planning and management are examples of the range of specialist subject areas students were expected to integrate into their professional problem-solving subjects. Learners were also encouraged to bring previous personal and professional experience to bear on the problem.

In interviews students provided examples of where and how they had transferred particular areas of knowledge and types of skills from core subjects to workplace practice. One such professional skill was thinking holistically.

I know when I'm thinking about something... before I just used to consider the one thing but now I think about everything involved with it as well. It's not just the smaller problems, like I said with doing say your reports at Uni

you tend to think about the other things as well, like the background to why you're doing this and what the problem is and why it's come about (ROI #5).

Such comments were rarely concerned with the application of new knowledge for work with community. At this early stage in the students' professional lives, students were more concerned with the application of the sorts of professional skills they required to do the job in the workplace. For example students identified increasing confidence in report writing for work because of the attention core subjects gave to developing this skill. Examples of comments include:

I know myself that I've actually improved [in report writing], and to a degree, [the assignments have] sort of helped with my writing at work - even if it's just general information like work reports to the council...or to send up to the supervisor just to let him know what I've been doing. The subjects have been a great help there (ROI #3).

[Core subjects] definitely helped with writing up a [work] report, like I did one on the teleconference...and just based it around the type of structure that was required for the problem-based learning subjects, you know with the background and the introduction and things like that. I definitely think it helped me be a bit more clear and concise...(ROI #5).

Locating problem activities in students' own work settings or living environments reaped other practical benefits for them. In relation to Environment and Community Studies, one student mentioned:

I thought that Community Studies [enabled me to] establish links with local council... That gave me the confidence to get out and to meet the local government EHO's and [ask for] some advice on how to go about [the assignment] and make contacts... Now I feel confident enough to just go straight to him and say 'look, I have this problem with this, this and that' and anything to do with local government, I have my contact (ROI #3).

Effective reasoning skills

The nature of environmental health problems varies considerably, as does the scope of professional practice. Different problems for practice require the application of different sets of knowledge, skills, and approaches in different circumstances. As with any other dynamic field of professional practice, environmental health practice is constantly evolving. Even twenty years earlier, when the course was first established, it

was never intended that the degree would teach students everything they needed to know to do the job. Rather, course designers set out to develop problem-solving capabilities in students. In their words:-

The field is enormously broad and emerging problems frequently demand interdisciplinary and innovative solutions. A descriptive approach to the teaching of environmental health cannot possibly encompass every aspect of the subject, let alone anticipate the multitude of future problems. In any event, how does one teach students to be interdisciplinary problem-solvers? Certainly not by describing pat answers to set problems (Ireland and Powis, 1988, p. 1)

The ability to effectively reason was seen as an essential skill for practitioners required to make sense of, and make professional judgements based on, often conflicting health and environment information. One student identified her own growth in this area during her time in the course.

I think [the core subjects] develop your ability to actually have a whole heap of information and to use it. To pick the bits out that are important and the bits that are not and...to put it all together. I guess before that I just used to babble on and just write forever. Like in school that's what you do, you just write, write, write (ROI #5).

Different methodologies of problem-solving within the various core subjects aimed to develop, among other things, effective reasoning skills in different but complementary ways. Some core subjects took a contextualised scientific method approach to study design, data analysis and report structuring, while others developed skills in qualitative study design, analysis and reporting. Students reported being able to take elements of these methodological approaches and apply them generally to their work.

So far, I think the Terrestrial and the Community Studies really...showed me how to find problems, how might be the best way to deal with problems involving people (ROI #10).

Incremental development of effective reasoning skills was a specific design feature of the course. As the program's founders put it:

The (core subject) introduces students to real world problems in the surrounding community and environment, which have been carefully selected for the learning opportunities they afford. The progressive levels of complexity and the challenge in each (core subject is) pitched at a level

consistent with the developing knowledge and disciplinary base of the students. The level of responsibility taken by them, in the problem-solving process, increases through the...years (Ireland and Powis, 1988, p. 3).

Students worked their way through the program from, in their first year for example, having to demonstrate the ability to apply reasoned argument within a given methodological approach (scientific methodology for example) to, in their final year, having to explore and apply a range of approaches to problem investigation, analysis and the presentation of findings. This approach is visually represented in Figure 13 below.

Self-direction in learning

Studying through distance education mode meant that learners had to adopt self-directed strategies for learning in every subject whether they were core or elective. However students in this research clearly identified that the problem-based subjects were much more challenging in this regard. As the following two excerpts from student interviews point out, Aboriginal and Torres Strait Islander students found the expectation of self-directed learning in core subjects extremely demanding.

Everything seems to be by-the-book with [the specialist elective subjects] but with the [core PBL subjects like] Terrestrial and the Environment and Community one, I think you have to know a lot for yourself. Like with the survey I did – the study using quadrants to find out the weed species and all that sort of stuff. I knew nothing about that beforehand. So it puts you behind. You have to have extra knowledge, do extra reading into it (ROI #11).

...in every [core] subject I've done its been like trying to learn two or three things at once and that's weighed me down (ROI #6).

McCall (1998) also found that Indigenous Australian students experienced difficulty with the self-directed elements of problem-based learning. Indigenous students in her study perceived the existence of a 'cultural clash' between the traditional Indigenous learning style where elders 'passed information down to the younger people' (p. 68) and the self-directed approach in which students had to take charge of their own learning. Her findings countered previous suggestions that active learning techniques were highly compatible to the learning of Aboriginal and Torres Strait Islander students (see Schwenke, 1990).

Yet Indigenous participants of the University of Western Sydney program who had made significant progress in the course could draw on a battery of already developed skills and could reflect upon the rewards of their earlier struggles. For them the demanding nature of self-direction in the core subjects was beginning to pay off in practical terms.

Now when I get an assignment that does require you to go and find different documents and extract things out of them, and try to understand the tools and processes that go into developing those documents...they're just things that I could never have done before. Even just in terms of...knowing what organisation to go to for different documents to do assignments and stuff like that. Like, it mightn't be a big thing to some...but...depending on what environment people come from, and educational background they have, that could be a pretty daunting sort of

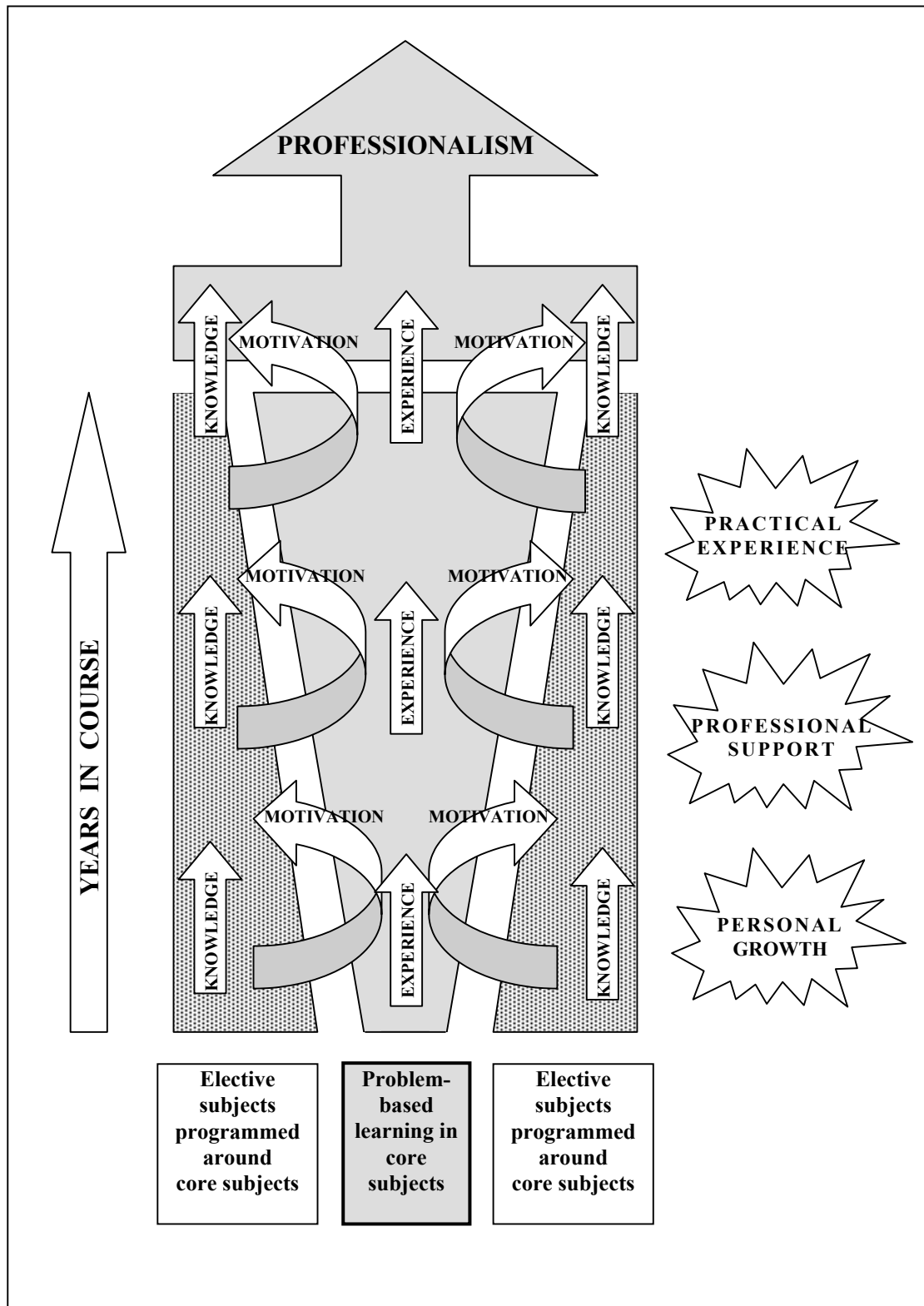


Figure 13: Integrative model for environmental health professional education (adapted from: Ireland & Powis, 1988)

task...Now I just noticed looking through [next semester's study material] there's an assignment where we have to refer to an Australian Standard...and if that had been three years ago...I would have gone 'oh ghee's, where I'm I going to get that from?' And now I just know where I can get that and have it here within a couple of days and I'm away (ROI #14).

A positively reinforcing learning experience such as the one described here can increase student confidence in their approach to inquiry and assist them to tackle new, more challenging learning situations as they arise. It illustrates the potential of problem-based learning to develop certain professional skills in learners over time, another important design feature of the original environmental health course at University of Western Sydney (see Figure 13).

Motivation in learning

Motivation in learning appears to be linked to the academic performance of students, their individual experiences of the learning venture, and their perception of how useable the new knowledge and skills might be for them. Most staff provided affirming and encouraging feedback to students on their written submissions and verbal presentations. In keeping with the model presented in Figure 13, staff viewed the academic performance and progression of students through the program as strongly linked to such strategies. Again, as Ireland and Powis (1988, p. 4) put it:

Disciplinary knowledge and skills which have been developed by the students in parallel with the (core), are immediately applicable in the problem-solving process. This provides the mechanism for interdisciplinary integration and in turn motivates the students in their disciplinary studies, by demonstrating relevance to the real world.

Students in this study identified that staff did not focus solely on the technical points in their feedback but rather provided detailed commentary on areas of work well done as well as ideas that needed further development. At every opportunity staff's comments focused on encouraging improvement so that any subsequent submission could redress the shortcomings of the previous assessment task. In this way feedback for core subjects was designed to both motivate students, and as the following statement from an interview points out, to build students analytical and communication skills and confidence over time.

I know with Terrestrial, the comments were really handy and made a lot of sense for your next assignment (ROI #3).

Most students were able to identify an aspect of the core subjects that was of personal or professional interest to them or of significant importance to them in some way. However, there were also students for whom the course, its materials, and for that matter, the profession for which they were training to practice in, just did not suit. One such student was recruited by a mainstream health agency after being pressured to move out of a community-based certificate training course in Aboriginal health and into a full professional traineeship in a field not even fully understood by the student. In an 'exiting' interview twelve months after commencing the degree the student made the following simple and clear point about motivation.

The course was ok but virtually I wasn't motivated to study...I couldn't get excited by it at all (ROI #2).

The reasons for this particular participant's dissatisfaction with the course, and the professional training program more generally, are explored further in the following chapter on 'Student Experiences in the Workplace'. For now though, it is important to realise that where students did not have adequate professional support in the workplace, which included having their studies reinforced through some way in their work practice, there was a strong likelihood that they would, sooner rather than later, withdraw without having made significant progress in the program.

Problem-based versus traditional subjects

Qualitative studies comparing experiences of students in traditional lecture-based subjects (or in this instance, conventional distance education subjects) against student experiences in problem-based learning subjects reveal both positive and negative perceptions of the problem-based learning experience (see Albanese and Mitchell, 1993; Aldred *et al.*, 1997). Aboriginal and Torres Strait Islander students are no different in this regard. McCall (1998) for example identifies a range of mixed feelings and responses to the problem-based learning experience by Indigenous medical students at Newcastle University. This study extends on these findings.

One of the important professional skills the environmental health program engenders is that of reporting on findings of student investigations into their problems. This reporting comprises both written and verbal presentations. Giving oral presentations in front of teaching staff and fellow students can be a daunting experience for students and professionals alike. Few students found the task enjoyable. Most considered it challenging and for some students it caused considerable anxiety.

Aquatic...[is] fairly involved and [you have] to actually speak at a seminar. I remember we did that in Community Studies and in Terrestrial and I thought...‘once I’m up there I’m right’. But I think the biggest problem is knowing that you’ve got to get up and say something. When we did Community Studies we had to give a report and speak to everyone. We had about 8 people in our group and only 3 of us got up and spoke on what we did and why we did it. I don’t have a problem [presenting], only when I look up at the other students. I know that [a few others] don’t mind but [one student] sort of has a fear of getting up (ROI #3).

Similarly, McCall (1998, p. 102) found that Indigenous students with poor proficiency in Australian English experienced a heightened sense of inferiority and a loss of confidence which led in turn to a reduced participation in group problem-solving and reporting activities. Her work confirms the findings of this study that, whilst problem-based learning teaching techniques did help Indigenous students develop a range of useful, applied and transferable skills for work, these students found the experience challenging. Where students had not previously been required to integrate knowledge from a range of sources or disciplines, the expectations of problem-based learning subjects proved particularly daunting.

The difficulty I think in [a core] subject is just getting the information, collating it and rewriting it or pulling out the bits you want or what bits are appropriate or what bits aren’t...knowing actually how to write it up. Whereas with the other [elective] subjects, the assignments are fairly straightforward. There is basically a right answer with [them], whereas with the problem-based ones, there’s not...(ROI #5).

The latter half of this comment represented a recurring theme from discussions with students. This same student expanded on her concerns about dealing with the elements of ambiguity and relevance in the core subjects.

I just find [structured content subjects] easier. I hate to be on the wrong track and I hate to waste time and I hate to spend a half an hour doing something

that wasn't necessary. Whereas I think if it's structured I think you know exactly what you're supposed to do and how you can do it and what it's for. Whereas I think if it's not structured, you can spend half the time doing something that's not relevant...(ROI #5).

There was also a strong sense amongst students interviewed that the conventional distance education subjects were generally less demanding than the core problem-based subjects. As the following extracts from records of interviews illustrate, conventional distance subjects were easier for students to succeed in for a variety of reasons. The first of these is that the distance learning packages provided to students contained most, if not all, the material required to complete assignment tasks.

...everything is there [in the material provided] and you read it and what's written is there sort of thing... You're taught everything you need to know so that you can pass the exams and the assignments (ROI #4).

Secondly, students reported finding the assessment requirements of conventional subjects easier to satisfy. The assessment regimes of elective subjects generally drew heavily on student performance in written examinations at the end of each semester. Intensive on-campus tuition was provided to students just prior to examination periods as a supportive strategy. As explained in the introductory chapter, the majority of students who received additional tuition in elective offerings performed well enough in their exams to pass the subjects. Many claimed that without that last minute face-to-face tuition they would not have successfully completed examinable subjects. Indeed it was a feature of the support program later noted by Druett (2001, p. 60) as highly valued by students. But as Aldred *et al.*, (1997, p. 1) point out, students tend to easily forget information obtained in this way and find it difficult to apply to new problems. Student appreciation for the kind of last minute priming said more about their ability to 'cram' or rote learn than it did about effective learning outcomes. Numerous excerpts confirm this point.

In a day or two I could do a crash course in a subject and you know, pick up enough to go in [to an exam] with a little bit of information and turn it into a pass (ROI #14).

With a lot of the subjects you just sort of learn as much as you need to know to understand them and to be able to do the exams and the assignments (ROI #5).

Lastly, there was evidence of preferred learning styles of individual students influencing the way students responded to the conventional or problem-based distance subjects. Two opposing styles for example are represented in the following student statements. In the first a student accepts that gaining disciplinary knowledge is important for developing a literacy in key scientific principles, but that his own preference is for learning about broader concepts that he can apply in practice. In the second statement a student expresses a preference for propositional, instruction-based learning, which can be put to a defined use in the work place.

The science subjects they are just, get them done, get them out of the way sort of thing. You do learn a bit from them but it's working in a too smaller area for me, like at a micro level (ROI #10).

I can't speak on behalf of the other students, but I know with myself I'd rather be taught something than have to self-learn it...I prefer to know exactly what I have to learn rather than do facilitated learning (ROI #5).

This difference in learning style is to be expected and runs counter to the view of some educators who claim there is a single preferred learning style among Indigenous peoples.

Conclusion

Students' overall experiences with problem-based core subjects and the more traditional elective subjects in the degree varied within the cohort and across the period of the research. Based on the ways students talked of their experiences in the core curriculum, the objectives of problem-based learning appear to be met by the distance education environmental health program. On its own, this brief overview has demonstrated that Aboriginal and Torres Strait Islander students can and do work within the confines of these objectives and principles. In doing so Indigenous students managed to overcome a range of structural, academic, support and cultural impediments to learning through a problem-based curriculum at a mainstream University. The questions that arise out of these findings and that remain unexplored in the professional education and workplace learning literature are:

1. What else might Aboriginal and Torres Strait Islander students need from problem-based learning subjects?

2. What other skills and knowledge might complement those developed through problem-based learning and better assist them in their practice?

These lines of inquiry are explored in the following section.

4.3 Disjuncture in the Core Curriculum

The problem-based learning core subjects in the University of Western Sydney environmental health degree were identified by Aboriginal and Torres Strait Islander students as having different characteristics to conventional distance education subjects. Just as this review identified problems and issues with problem-based learning it also reinforced the findings of Thurecht and Vose (1997) and McCall (1998) that Aboriginal and Torres Strait Islander students do identify useful elements in problem-based learning for their work practice. Contrary to Thurecht and Vose however, this research does not conclude that problem-based learning is an educational approach that is 'ideally suited to cross-cultural learning' (p. 602). Rather it can merely claim that there is scope in problem-based learning courses for Indigenous students to perform to the same acceptable standards as other non-Indigenous students, albeit at times with considerable difficulty.

To take this point further, a clear distinction needs to be made between the nature and delivery of the University of Western Sydney environmental health problem-based learning subjects and the Thurecht and Vose (1997) inquiry cohort. Indigenous students under investigation in the latter study were engaged in a full-time undergraduate program in applied health sciences. Under that three year study arrangement, it is unlikely that students would also have experienced much of the professional work setting. Conversely, two-thirds of Indigenous students in the University of Western Sydney program studied while also practising in the environmental health field (see Figure 3). These Indigenous students, and their employers, were therefore looking for an immediate and direct relevance of their course of study to their work, and an academic experience that would assist them in their practice.

The relationship of course participants to this kind of course delivery allowed for new questions to be asked about the effectiveness of problem-based learning for Indigenous students. Because the environmental health degree at University of Western Sydney is offered through distance education, an analysis of learners experiences can provide immediate answers to questions over the extent to which problem-based learning actually prepares Indigenous students for work. The experiences of Indigenous people involved in problem-based learning activities and work practice *at the same time* can help to determine whether other more important skills than those developed in full-time problem-based courses are necessary. Further, they can help determine whether other forms of knowledge and alternative versions of history could help to better understand some of the environmental health problems evident in Australian Indigenous communities today.

There was clear evidence contained in the transcripts of participant interviews to show students experienced elements of ‘disjuncture’ with the curriculum (Weil, 1989). If we go back to the discussion in Chapter Two and Weil’s investigation of the experiences of non-traditional learners in the United Kingdom, she found there to be disjunction between:

- non-traditional student’s expectations of, and initial encounter with, the formal learning context and the reality of that experience;
- the different values and beliefs adult learners and lecturers respectively bring to their interpretations of what it means to generate and validate knowledge and to inhibit and facilitate learning;
- the competing perspectives of teachers and learners in spite of teachers’ best intentions to provide programs that serve the needs of students; and
- the espoused purpose of education against the ways in which these purposes are contradicted by actual practices, processes and structures of higher education.

Weil’s forms of disjuncture stemmed from an assessment of experiences of non-traditional learners of both conventional teaching programs and more integrated, non-traditional tertiary programs of study. Taylor and Burgess (1997, p. 104) later assessed how well problem-based learning mitigated against these barriers to learning and how it managed to limit the resultant sense of disjuncture for the non-traditional adult learners

in their study. In adapting Weil's findings, Taylor and Burgess listed five key forms of disjuncture most likely to occur with non-traditional students. These include situations where:-

1. learners expectations were not met and where experiences of teaching and learning were inconsistent with the approach advocated by staff;
2. core aspects of learner identity were threatened;
3. learners experienced difficulty managing multiple and conflicting roles;
4. learners perceived that only certain kinds of knowledge were allowed while other knowledge was disallowed; and
5. learners experienced difficulty managing social differences and power relations.

But as with Weil's work before it, the assessment by Taylor and her colleague was based on the experiences of non-traditional students studying at universities in full-time capacities. Neither works therefore related the notion of disjuncture to *studying by distance education* and *studying while practising*. The originality of this research is its exploration of the impact of these additional features in the context of Indigenous professional education. The above five forms of disjuncture are used as an organising framework to analyse the experiences of Aboriginal and Torres Strait Islander learners engaged in distance delivery problem-based learning through the University of Western Sydney environmental health program. Later again, in Chapter Five, this same disjuncture framework will guide the analysis of students' practice and workplace experiences. For now though, the review explores student expectations and experiences in the core environmental health curriculum.

Learner expectations and experiences of core subjects

A perceived lack of clarity about what was being asked of students in problem-based assessment tasks was of some concern to students. One student for example expected the University would have provided her with clear and adequate guidance on what was required to satisfy core subject assessments. Instead, she found the ambiguity distracting.

I think the biggest problem I found with [core subject assessment tasks] is actually writing it up in how the University wants it... If you're not sure just what the lecturer wants then you find that you can...lose marks. Like even

though you think...you've done a good job, then you get it back and you think 'oh'. I think if you could find out how to do it in the first place it would be better (ROI #5).

Later in the same conversation this student said that there was an incongruence between the focus of the subject material and what she perceived the assessment task was concerned with. She stated that succeeding in core subjects was:

...just a matter of how well you can put [the written report] together and if you're not real good at that - if you can't be clear and concise - then that's a problem (ROI #5).

It is about conforming to the style definitely and...basically giving it to the lecturer how they want it, because it could be different to how you want to write it up, you know, how you think it should be written up or whatever (ROI #5).

This form of disjuncture was felt by other Indigenous students. One remarked in a stronger tone that he felt academic staff were more concerned with the final form and structure of the written submission than they were about student accomplishment in problem-solving.

I see the University as the power, they are the 'yeah' or 'nay' people who we've got to impress or learn the way they want us to...or we don't pass basically. I'm not sure how that could be turned around...but...I suppose it's basically us having to meet your requirements rather than us thinking. I mean, I couldn't see us solving the problem as the primary objective [of the subjects]. I saw the report and how to relate it back to statistics and putting in a graph, as more the important thing, and being able to present it to you properly, rather than actually solving the problem...(ROI #4).

The above statement illustrates how troubled and annoyed some students were that they were not going to get what they anticipated out of the subject. This particular student perceived that the intent of the subject was different from what was expected by staff. For him this discovery resulted in a degree of disjuncture between what he expected of the core curriculum and what he experienced in reality.

Another student was frustrated by some of the reporting requirements of the problem-based learning subjects. This participant believed that subjects promoted as problem-based, integrative and experiential should have encouraged learners' attempts to

integrate a range of views, diverse perceptions and varied approaches to data management and analysis. She was particularly interested in exploring ways to integrate her own life experiences into an analysis of the problem under investigation.

I have found that my life experiences have developed more realisations about how things work and how the world is, its been through life experience more than [formal] learning (ROI #6).

However this student found that teaching staff in the core subjects gave little or no credit to explanations of findings based on anything other than disciplinary or scientific fact.

A final key point raised by this group of students related to their expectations of using problem-solving subjects to explore actual problems in their practice. This concern set this cohort of Indigenous students apart from most problem-based learning students engaged in full-time academic programs. Full-time students rarely deal with anything other than hypothetical problems or scenarios. Distance students in the University of Western Sydney environmental health degree too are presented with staged problems. Being external students, they are invited to 'ground' their thinking in their own local context. However the parameters of the inquiry are set by the sorts of questions teaching staff pose about the problem. Therefore the treatment students give to the problem is usually predictable, particularly where students use the methodologies of problem-solving advocated by staff. As the following two comments indicate, some students felt teaching staff involved in the delivery of core subjects were not adequately prepared to support student exploration of problems beyond the parameters with which the teachers were already familiar. In this way some students found the core subjects somewhat limiting.

I think we need more opportunity [in core subjects] to identify with ourselves and our community and to tackle things from that perspective because most environmental health problems are in most of our communities. I suppose if I could apply that personal and community member perspectives to assignments, it would be more interesting for me...(ROI #6).

I'd like to work with these assignments [by] actually getting out there and doing it. That way you get the knowledge of how the procedure is done. Then I can write about it because I know what's going on, but if I'm reading

it or someone has told me it, I can't write about what's going on. I don't have the experience of it (ROI #10).

The frustration expressed by Indigenous students can be summarised as follows. Core subjects were promoted as providing a real world problem-solving experience. For this cohort, the expectation of core subjects was that they be used to explore issues highly relevant to their daily practice. However that was not strictly the case, since the types of problems and the limits of the inquiry were specified and managed by teaching staff. Across the full term of the program students were guided through the application of a suite of problem investigation tools useful to environmental health professional practice. This left little scope for individuals and groups to explore alternative problem-solving techniques and limited the potential for them to integrate these techniques into their workplace practice. Under the structure of the environmental health program, it was not until the final core subject in the degree that students got to really choose their problem for investigation and to nominate their inquiry approach(es).

Learner identity

Learner identity played a major part in the experience and interactions Indigenous students had with other Indigenous and non-Indigenous students and the teaching and support staff on campus. At other points in this document I have highlighted the diverse educational and work backgrounds of the Aboriginal and Torres Strait Islander students involved in this program. Others before now have also pointed to the differing cultural and social values that exist among Indigenous groupings in this country (see Dennis Foley, 2000; Commonwealth of Australia, 2000) and the implications this diversity has for educators of Indigenous learners (see Foley and Flowers, 1992; McDaniel and Flowers, 1995). Of the culturally diverse group of Indigenous students involved in this research, many came to the degree because of their desire to gain at least the same credentials, skills and knowledge in environmental health as their non-Indigenous counterparts. This group of environmental health practitioners were no longer prepared to work in 'assistant' positions under the shadow of qualified non-Indigenous professionals. They were no longer prepared to accept courses which did not prepare Indigenous learners for jobs in the dominant society (Duke and Sommerlad, 1976, p. 65). As one student pointed out:

You have to know how things are structured in society and how they work and the only way to make a difference is to have that knowledge. So, it's vital really (ROI #15).

The best way to get ahead is to be educated and develop through certain fields. At the end of the day, all going well, I will have a degree in Environmental Health science and can sort of take it from there (ROI #8).

This desire for 'white man's knowledge' does not come without some degree of conflict for Indigenous students. In order to gain full professional recognition as an environmental health officer, Aboriginal and Torres Strait Islander students are required to take up many of the same professional stances that have failed to adequately serve their communities in the past. By taking part in such a strong professional acculturation process, the Indigenous environmental health cohort risked losing their own cultural identity. Learner identity for Indigenous students of any mainstream professional program is likely to be under continual challenge. This research found no evidence to suggest that the problem-based learning approach to teaching core environmental health subjects at University of Western Sydney eliminated, or even mitigated against, this kind of disjuncture experienced by students. Instead, the main driver sustaining students through this period of challenge and personal disjuncture came from students knowing they were part of a wider workforce movement. Students built strong supportive networks during their campus-based residential workshops. These networks helped sustain them through a broad range of academic, professional practice and personal distractions. Learning about the work contexts of other Indigenous students occurred continuously through informal interactions at these residential blocks. Druett (2001, p. 59) noted the high value this cohort placed on the social and personal connections they made with other students from across the country, learning about their similarities and their differences. Self-assuredness and purpose were reinforced at these on-campus meetings, as was a broadening of the cohort's understandings of Indigenous environmental health issues and cross-cultural problem-solving.

Our networking...is still going, and when we went to Hawkesbury and met...all the other guys, that broadened the network into another State and we also share ideas, it was really good (ROI #18).

It adds an exciting point of view, like sharing views with people...from the Torres Strait. Just when you think that you have seen things they throw something else in out of left field, which is exciting (ROI #8).

For these students critical mass was important. As one student pointed out:

...the number of Indigenous students you have got down there already attending...[is] one of the main reasons that I'm down there... Hawkesbury's already involved with Indigenous students from all parts of Australia... If I go to another university you know [where there is] only one or two Indigenous students or something...I wouldn't feel right...(ROI #19).

Students extended their networks of Indigenous peers over time. They gained strength in sharing time outside of the classroom, or through forming discreet groups in field exercises. Foley and Flowers (1992) referred to this feature of segregation in the early stages of new workforce development initiatives for the disadvantaged, as 'strategic separation'. Over time students built the confidence to take themselves out into the wider cohort, with their cultural identity also strengthened. The students' personal and professional networks broadened as their confidence increased to include wider groupings of teaching staff and non-Indigenous peers.

I think that one of things that I have gotten from being at uni, like apart from just learning all the stuff at uni, that has been meeting other people. Not only in the course but also like lecturers...and just realising the potential things that you can do and...where you can go with it... It's a good experience to take away from the whole uni environment I reckon (ROI #14).

The majority of students were clear about their intention to use the knowledge and skills developed in the degree to improve environmental health conditions in Indigenous communities and the health and well-being of their own people. There was a strong link between learner identity and the work interests of the Indigenous cohort, a finding corroborated by an independent evaluation of the program (see Druett, 2001, p 46-47).

Managing multiple and conflicting roles

The majority of students in this study were employed in the field of environmental health practice. With the exception of only a few students not in full-time paid employment, participants had to negotiate with their employers for the time and resources to study. The nature and outcome of such negotiations placed some students

in a considerable bind. As will be explored more fully in the following chapter, many deferrals and withdrawals from the program were linked to the pressures of work and family life. These pressures resulted in the tendency for students to forgo dedicated study time in order to meet workplace demands or community and family obligations. Their academic performance naturally suffered as a result. Students who could not deal effectively with multiple roles and competing interests did not progress in the course.

Up to this semester [taking study days] was pretty adhoc, and it wasn't really monitored... I don't blame that on anybody you know...I guess it was a bit of both. Because there's...work things I would have rather done. I thought I could catch up on the studies later. But that never happened. You know, so I guess that's my fault...(ROI #13).

At a conceptual level too some students alluded to the conflict they experienced in writing about their workplace. Exploring the possibility of core subjects being used to critique organisational impediments to his work, one student reacted with concern and caution. He felt that such an approach would only result in antagonism and possible reprisals.

But the thing is I don't want to be seen as putting down the organisation that I'm working for (ROI #10).

His words illustrate the disjuncture experienced by students in playing multiple, and at times, competing roles. The potential for a clash of interests was obvious. After all, any one student might at the same time be a training environmental health professional, an employee of a mainstream government agency, a student needing to satisfy a minimum academic standard in a mainstream professional degree, an Indigenous person with a desire to speak out about problems affecting communities in his local area, and a resident in an Indigenous community. A number of students gave examples of disjunctures of this sort in their interviews. These students described an instance where several of their cohort were given an explicit instruction by their employer not to undertake a particular core subject assignment. The assignment required students to prepare a profile of a community of their choice, and involved undertaking an assessment of the environmental and health needs of their chosen community. The employer intervened claiming that for ethical reasons Indigenous communities should not provide the focus for student research activities. Yet the same task had previously

been set for non-Indigenous students without any concerns about potential infringement of individual or community rights. The cohort's first experience of investigating 'real world' problems turned into a source of considerable lament for one student, who stated:

Had I been doing it now, I probably would have focused on one of the Aboriginal communities in this area, but I think the biggest problem there was [our employer]. It probably would have been nice to do...[a] community but there was some sort of friction or concerns [about how the University and the]...trainees were going to use the information... I remember [we were told by head office] to actually hold off on doing the assignment...and that just put me right off doing the assignment straight away. I would've liked to have done an Aboriginal community but I think it was a lot easier and a lot less political to just go out and do anything but an aboriginal community (ROI #3).

The initial concern of the employing agency, combined with the subsequent exchange between the employer and the program staff at university, placed students in a very difficult position. Would they go against the wishes of their employer to study an area of real interest to them, or would they avoid the aggravation and simply study the less relevant environment and health issues of non-Indigenous communities? Some students reported fabricating the details of their study community whilst others chose non-Indigenous communities so as to avoid being the centre of controversy between the University and their employing organisation.

Knowledge allowed and disallowed

Earlier I reported that Indigenous students felt constrained by the reporting protocols of core subjects. Some thought their performance in problem-based subjects amounted to how well they conformed to a particular reporting style. Others expressed concern that they could not find a way to integrate their life experiences in reporting about the problem. One student expressed this concern in the following words.

I liked the subject... I wouldn't say it was my favourite subject but...I liked being out in the field. I liked doing things with my hands...problem-solving I suppose... But I did find it constrained in a way... Like when you have to write a report...you've got to acknowledge other people and their work but I feel like there wasn't a lot of room to have your own ideas or alternative interpretations of the results (ROI #6).

On the surface, this seems to be a simple matter of the student not fully appreciating the 'rules of academic writing'. It may also illustrate the student's personal preference for resisting traditional techniques. But further discussion revealed something deeper. This student was struggling to find a way to legitimise her alternative views and interpretations of the problem under investigation. She was expressing a concern about the design of core subjects and how the traditional problem-solving methodologies employed in them limited the ability of students to explore different dimensions of problems. This particular student was very interested in the cultural, political and social dimensions of environmental health problems, not only their bio-physical and technical elements. She felt there was no place in the existing core curriculum for non-traditional views to be expressed and limited opportunities for applying alternative problem-solving frameworks.

I know with the assignment we had to look at scientific fact but I would have liked to have had more of a cultural and political view in what I am doing. I find that with everything I'm doing...and because Aboriginal culture is not fully understood at uni, I don't think it's given enough credit when you have an opinion about it (ROI #6).

Her partiality to a core curriculum that would more overtly take up the social, political and cultural dimensions of problems did not come from an inability to perform in the disciplinary sciences. She already held qualifications in the biological and chemical science fields and had worked for a number of years as a laboratory technician prior to joining the degree. No matter the type of problem under investigation in the core subjects, this student believed that no reasonable exploration and explanation could occur without consideration to its wider socio-political and cultural context. Her expectation that problem-based subjects would develop her critical analysis skills was not realised in any of the first three core subjects. This was the cause of considerable dissatisfaction:

...well as you know I spent time...with [my partner's] work and experienced the whole political scene...working in the medical service. I was there when so many important changes happened, like the ownership deals with National Parks, and when our culture was actually recognised as being alive. I come out of there with all these hopes and like at uni I am writing 'a plus b equals c'. I think I was hoping to be able to change things more (ROI #6).

This particular limitation of the problem-based core was later identified by Druett (2001) as a key shortfall in the program. In her role as independent evaluator of the Indigenous Communities' Environmental Health Program, she stated:

Very few students...demonstrated interest or the ability to critically analyse the course in relation to the social justice issues that regularly occur in their local communities... This apparent lack of critical analysis or reflection suggests that students have not had the opportunity to develop or demonstrate the acquisition of these particular skills in the studies to date. There is no question that these particular skill sets would be a distinct advantage when dealing with the cultural differences between mainstream bureaucratic agencies and local Indigenous community groups in relation to the development of cultural appropriate and sound environmental health services for Indigenous populations (Druett, 2001, p. 61-62).

Druett recognised the importance of developing critical analytical skills throughout the entire program. The student who struggled with the course because of its apparent aversion to cultural, social and political critiques in problem analysis was on the other hand hopeful that a single subject would meet these needs.

I think maybe having a subject on its own with problem-based learning, but more of an outlet for cultural and political views to give people the freedom to start thinking that way and not be constrained in their thoughts...maybe get the lateral thinking going and maybe keep the scientific fact out of it and basically give people a sounding board to start them to think that way (ROI #6).

This request indicated a belief that the existing suite of core subjects either could not, or would not, ever be altered to include the additional contextual dimensions to problem analysis. In asking for a single subject to provide that opportunity this student indicated how entrenched she felt the opposition would be to the broadening of the way problems are viewed in the course. Secondly it revealed her deep concern to legitimise other forms of knowledge that could help explain environmental health problems from perspectives other than those of the dominant culture. Solomon (1999, p. 125) cautions educators and practitioners engaged in work-based learning against presumptions of 'sameness', where those who are not the same (ie holders of different cultural identities, non-traditional knowledge or alternative professional skills) are seen to be in deficit. In challenging these presumptions, she asked program providers, teachers and workplace facilitators to consider the following question:

...does training have an assimilatory or cloning function or is it one that takes advantage of different knowledge and experiences even when they do not necessarily fit within a fixed prescriptive framework? (Solomon, 1999, p. 126).

The future success of Indigenous students in the environmental health program at University of Western Sydney, and in their later practice, may hinge on the program's response to this question. Students have already sought alternative ways of framing, and responding to, the problems presented in core subjects. Mostly they were concerned about the tendency of the core environmental health curriculum to underplay the cultural and historical reasoning at the heart of the problem. Many did not expect this to change in the near future. They accepted that the knowledge and skills they were developing in the course were the same as those taken by every non-Indigenous environmental health officer from the professional degree. It was therefore recognised as an important element of training for Indigenous practitioners. For some students, this was as far as they thought the course should go. One student even conceded that there was no natural place for alternative perspectives in the program because the degree and its teaching staff were 'so mainstream'. As for preparing them for practice in more complex and contested cultural brokering roles, the student saw that as their individual responsibility.

...[the University is] basically teaching the academic side of being an EHO. I think that's a valid and needed part of it because you've got to know what you're on about so you can effectively do the same job. I don't even know if it's the University's role to teach us life skills (ROI #4).

Some students believed that these skills could only be developed in the 'school of hard knocks'. They believed such skills were developed through dealing with problems associated with life, and that these problems were not exclusive to the workplace. Accordingly, one student could not see how a University subject could teach that sort of thing.

I think only the day-to-day dealing with life's problems prepares you to know how the system works and know how to circumvent it - maybe a choice few words in someone else's ear at a higher level over a beer or two at the pub. Being able to work around it. Knowing it so you can work around it is the way I look at it (ROI #4).

These comments came from a student who was part of a family active in land council politics. He had a tendency to make political assessments of situations and as such already had well developed skills in evaluating the motives of others.

I look behind people's motives and their agendas first, that's just naturally the way I am (ROI #4).

But not every student shared this propensity. Nonetheless every student cited the need to deal, almost daily, with racism and workplace prejudice in some form or another as part of life as an Aboriginal or Torres Strait Islander person. Not all students agreed that the life skills developed through such experiences were enough to take them forward in their professional interactions and careers. One student clearly identified an expectation that problem-based learning subjects would provide the academic forum for developing critical perspectives on everyday work practices.

...too many of us grow up just nodding our head or believing that people are nice to you for your own benefit... and that's hard to see sometimes... I don't think its in Aboriginal peoples' nature to look for that...you basically take things on face value a lot and you usually end up stung... [We need to learn] how to be more assertive and achieve the outcomes that we want instead of just settling for whatever (ROI #6).

Comments of this nature alert us to the potential shortcomings of educational approaches that either underplay or depoliticise the social and cultural context of problems used in learning ventures. In the context of a professional education program for Indigenous environmental health practitioners, these shortcomings risked producing graduates who were ill-prepared to tackle the more challenging political and cultural issues in their workplace.

Social differences and power relations

Students understood themselves as being 'special' in the University of Western Sydney program. There was considerable support and attention given to their needs. This profile on-campus and among their non-Indigenous peers had the potential to set them apart from the main cohort of students and to isolate them as a group. Most saw that support and attention as a great opportunity, both for themselves:

it's an opportunity I don't want to miss out on. I'd like to come through with this one (ROI #18).

and for their people:

I'd really like to get the degree, to get it completed... If we are going into self-management and try and meet the needs of the community then you are going to need that qualification to manage...projects...around the community. It is going to cost the council a lot [more] to bring in people in to fix the problem than have one with the qualification within the community. And what better person than a local to have that knowledge and the qualification? (ROI #18).

The opportunity for this student was to apply the skills and knowledge necessary to achieve results in communities in ways that others had been unsuccessful beforehand. Nonetheless, there remained some tension within the Indigenous cohort over who set the agenda for learning. More than one student had withdrawn from the program because they did not see it developing in them the skills they needed to challenge existing barriers to change in the structures and actions of government and community. Others remained in the program despite recognition of its inherent inflexibility. When considering the University's role, one student stated:-

its really the perspective behind [existing thinking] that I'd like to see [the program] change...but as I said [the University]...dictates what's more important (ROI #6).

This student was frustrated because she not only wanted to take from the degree the professional skills to demonstrate problem situations existed, but also the opportunity to explain the broader social, political, historical reasons for their occurrence. Most importantly, she wanted to explore possible solutions to problems of practice from that context. In a work-based professional education program such as this one, this approach would naturally require her to develop the skills (and have the intellectual freedom) to analyse the very workplace relationships, policies, structures and practices that obstructed the work of Indigenous practitioners. Writers like Butler (1999) and Solomon (1999) argue that it is these social cultural and discursive relationships between people at various levels of work, and their effect on the structures and operating of organisations, that warrant careful consideration in learning from (and about) the workplace.

The reductionist scientific or even applied problem-solving models did not automatically allow for such an approach to be incorporated into the problem-based core curriculum. As a result this student felt core subjects aided in the perpetuation of dominant societal views and perspectives. The tension between the need for mainstream knowledge and skills and the need to legitimise their own ways and practices meant that Indigenous students felt the learning was all one-way. In their view, Indigenous students had to learn the ‘white way’ but there was no compulsion on the side of non-Indigenous students and teaching staff to learn anything of the Indigenous context.

In a way that’s like me learning how to communicate with you or other academic people or people in that field, which I accept because you cant get ideas across unless through your way of communicating. But I think it should go both ways not just one way. I think Aboriginal people have a lot to offer as well in a different way...(ROI #6).

Through limited ‘both ways’ exploration of issues (see McTaggart, 1991), Indigenous students were required to learn the language and practice of power. Their performance was evaluated against the rules and norms of the dominant culture. There was no obligation on non-Indigenous students to be exposed to, or develop understandings of Indigenous view points. Nor was there an obligation for the mainstream educational program to accept their concerns. As one student remarked in a program evaluation focus group, there were times when ‘staff tried to make students see things their way’ (Druett, 2001, p. 60). Some students came away from the program troubled by this imbalance, seeing the course and the University as agents in the continuation of asymmetrical relations of power between Indigenous peoples and the mainstream education system, and between their people’s needs and conventional environmental health practice.

4.4 Conclusion

Problem-based learning may have mitigated in some way against learner disjuncture for the full time professional education students of Thurecht and Vose’s study (1997).

However the findings of this research into a cohort of undergraduate Indigenous environmental health students who remained in their communities while studying by distance education, indicate that learner disjuncture with its core problem-based curriculum was highly apparent, and manifest in many forms.

Earlier in the thesis it was suggested that the sorts of problems Indigenous students experienced with the core curriculum were rooted in deeper social and historical circumstances. The findings of this review of the experiences of Indigenous students in the University of Western Sydney's core environmental health curriculum revealed the following:

1. Indigenous learners appreciated elements of the core curriculum but expected to be able to understand and respond to set problems using much wider frameworks than the existing model provided.
2. Indigenous learners valued being part of the development of a wider workforce and social movement, but found that the core curriculum did not enable them to fully take advantage of this emphasis.
3. The core curriculum gave little assistance to Indigenous learners in dealing with the conflict they experienced when thinking and writing about their preferred future roles in community and government.
4. Indigenous participants felt problem-solving exercises (and the methods and assessments processes used) aimed at producing 'sameness' amongst its participants – Indigenous and non-Indigenous alike – and that this sameness privileged the norms, views, approaches and structures of the dominant society.
5. The problem-solving models of the core curriculum were not applied robustly enough by staff to enable Indigenous learners to contextualise their own problems of practice within broader social, political and historical analyses.

These findings validate Boud's (1999, p. 7) contention that simulated learning activities in problem-based courses tend to ignore important features of professional work that practitioners must be able to deal with upon course completion. Such an admission of a shortcoming of problem-based learning from one of its most strident supporters is remarkable. And the shortcoming can be demonstrated in no clearer a way than through an analysis of the learning experiences of distance education students (many of them

also practitioners in the field) who have the problems for investigation set for them. This feature of the University of Western Sydney environmental health degree, accentuated the shortcoming identified by Boud in at least the following two ways.

- By failing to capitalise on the actual problems of learner's work and daily issues of practice, distance education problem-based learning core subjects remained as abstractions; and
- By failing to locate the learning activities of Indigenous participants within their broader social, political and historical contexts, the problem-solving models could not hope to adequately address or satisfy Indigenous interests in the problem.

These findings are built upon and further explored in the remaining chapters.

CHAPTER FIVE – STUDENT EXPERIENCES IN THE WORKPLACE

5.1 Introduction

Since the 1970s it has been obligatory for any research paper discussing Indigenous health to begin with statistics that reveal the severely negative quality of life indicators for Aboriginal and Torres Strait Islanders, and to compare these against the figures for non-Indigenous Australians (from Borrie, Smith and Di Julio, 1975 through to McLennan and Madden, 1999). Whether it be a publication on the effectiveness of clinical screening programs (Mak and Straton, 1997); or drug and alcohol abuse (Gray *et al.*, 1997); or lifestyle diseases like diabetes and hypertension (Saggers and Gray, 1991; Reid and Trompf, 1994), the figures invariably highlight the severe health disparity between Indigenous and non-Indigenous populations in Australia. The combined data clearly illustrates the extent of the public health challenge facing Australia today; that of building healthy Aboriginal and Torres Strait Islander communities (Golds *et al.*, 1997).

For more than 20 years research in rural and remote Aboriginal communities has also demonstrated the importance of managing the physical environment in order to protect

the health and well-being of its populations (HRSCAA, 1979; Gracey, 1987; Scrimgeour and Seeman, 1989; Munoz, 1990; Hearn *et al.*, 1993; and Winch, 1993). Despite this there remains ample evidence to show that poor environmental health conditions continue to exist in Indigenous communities (Western Australian Health Department, 1995; Gracey *et al.*, 1997; and Environmental Health Needs Coordinating Committee, 1998) and that the health impact of such conditions on Australia's Indigenous populations is significant. (Stanley, 1984; McLennan and Madden, 1999; and enHealth Council, 1999).

Results of the latest Western Australian survey of environmental health needs in Aboriginal communities (EHNCC, 1998) for example present a detailed account of the status of environmental health conditions in some 259 Aboriginal communities (Jolley, 1998). The results reveal the following:

- 7.5% of communities are without adequate water sources and the water supplied to 75% of communities is not disinfected.
- 8% of communities are without adequate sewage treatment and disposal systems.
- 16% of communities exhibit inadequate housing.
- 29% of communities cannot rely on regular collection of solid waste and 21% of communities have inappropriate or inadequate rubbish disposal sites.
- 25% of communities either do not have on-site or do not receive visits from an Environmental Health Worker (EHNCC, 1998, p. 6-7)

These figures paint a picture of limited and ineffectual environmental health services and hardware being available to discrete Indigenous settlements in Western Australia. Yet the findings of such surveys are of no great surprise to those whose daily work it is to bring about improvement to conditions in community settings within Western Australia, and further afield (Stephenson, 1999b). The figures are alarming however and present a significant challenge to Indigenous and non-Indigenous members of the environmental health profession. They also present a platform from which to argue that the provision of an effective, efficient and dedicated environmental health service for Indigenous communities in Australia is one of the single biggest priorities for public health in the nation.

This chapter discusses the workplace context of Indigenous students enrolled in the University of Western Sydney environmental health degree. The chapter draws on data gathered directly from students through interviews and focus groups with the researcher, and from a range of other sources including discussions with environmental health policy and decision makers, documentation from government agencies, and presentations by both Indigenous and non-Indigenous practitioners at workshops and conferences. The chapter extends Weil's discussion on disjuncture in the formal educational settings to an analysis of learner experiences in the workplace setting. Before exploring workplace disjuncture in detail however, a brief account of the policy and program context of Indigenous environmental health in Australia will be given.

5.2 Policy and Program Context

In 1996 there were no Indigenous environmental health professionals practising in the Australian workforce. There was however a growing number of community-based Indigenous environmental health workers, retained under a variety of employment, training and development schemes to battle against 'front line' community environmental health problems. These practitioners enjoyed little support from a strategic development and policy perspective, yet they were frequently relied upon to perform duties in community by their non-Indigenous professional counterparts in government.

In 1997, as the first cohort of Indigenous practitioners commenced the University of Western Sydney professional environmental health degree, initial consultations were being conducted by the then Commonwealth Department of Health and Family Services (CDHFS) to identify ways to improve the management of national activities in Environmental Health. The Commonwealth Department, in conjunction with the States and Territories, considered establishing the country's first national strategy for environmental health; a strategy they hoped would build collaborative efforts between governments, industry, communities, and non-government organisations to improve the response to and the administration of environmental health concerns in Australia.

A National Environmental Health Strategy Steering Committee was established and a series of consultations with interested parties began. Representatives of a range of bodies with specific environmental health responsibilities and expertise were invited to workshops around the country. The consultations aimed to determine whether the directions proposed for the National Environmental Health Strategy, as outlined in a widely-circulated Consultation Document (Woodruff and Guest, 1997), were supported by members of the key groups.

Indigenous issues and stakeholder views were not strongly represented in the original consultations. An opportunity existed to bring Indigenous practitioners, other professionals, policy makers, program managers and funding agency representatives together to discuss their interest in a possible national strategy for environmental health. Staff of the University Indigenous Communities' Environmental Health Program were in a strong position to undertake this work and saw it as an opportunity to elevate the status and attention given to environmental health issues impacting Australian Indigenous populations and their community-based practitioners. The University team believed that a truly national strategy could not be possible without the inclusion of issues and strategies supporting the Indigenous Australian population for whom all quality of life indicators remained significantly lower than those of most, if not all, the non-Indigenous populations in the country.

In August 1997 the Indigenous Communities' Environmental Health Research and Development Program conducted a national workshop for Indigenous environmental health practitioners in Alice Springs. This workshop brought together 36 participants from three States and the two Territories for the purposes of identifying Indigenous environmental health issues to be included in a potential national environmental health strategy (see Brown, Stephenson and Mitchell, 1997). The findings of this round of consultations became part of a developing data bank on Indigenous environmental health, on which the writers of the first draft strategy would draw (see NEHF/NPHP, 1998). It was abundantly clear however that simply inserting these findings into a data bank could not be the extent of policy support, if improvements in Indigenous health and well-being were to be made, much less sustained. Rather the task ahead required a much more multi-layered and integrated response, one which aimed to:

- Re-dress obviously longstanding employment and workforce development issues;
- Fill policy voids and funding shortages,
- Meet education and training requirements; and
- Address practitioner concerns about the lack of a suitable mechanism for ensuring Indigenous representation in the profession and in government decision-making circles.

As one element to this broader approach a much larger forum subsequently came together in May 1998 in Cairns to discuss issues of concern for Indigenous environmental health and to propose collaborative strategies for change and improvement. This ‘Inaugural National Indigenous Environmental Health Workshop’ was attended by approximately 120 delegates and was supported by the Commonwealth Department of Health and Aged Care, the National Environmental Health Forum and the Australian Institute of Environmental Health. A video of the workshop was produced (NEHF/AIEH, 1998) and a monograph of workshop presentations and recommendations was compiled (NEHF, 1999).

Drawing on feedback from the earlier draft strategy and these two national consultations, the Commonwealth Government soon completed and released Australia’s first National Environmental Health Strategy (enHealth Council, 1999). The next step for the Commonwealth was to support a mechanism for developing programs of action around the issues and needs identified in the Strategy. A third national workshop, this time in Broome, Western Australia, in May of 1999, set this process in train. At regional and State levels also, Indigenous practitioners combined with other environmental health professionals, government planners and decision makers at annual Environmental Health Worker Seminars in Western Australia (Prouse, 1999, p. 38) and regular Environmental Health Worker Workshops in the Torres Strait and North Peninsula Area of Far North Queensland (Heggie, 2000, p. 23). Together with those at the National level, these forums prioritised the needs of an environmental health workforce for Indigenous communities according to the schedule in Table 3.

As the most recent ‘backbone’ documents, the National Environmental Health Strategy (enHealth Council, 1999) and its Implementation Plan (enHealth Council, 2000a) now

provide a platform from which to design and deliver major environmental health development programs for Indigenous communities. Chapter Four of the National Environmental Health Strategy titled 'Environmental Health Justice' identifies environmental health risks to Indigenous children and environmental health concerns of Indigenous populations more widely. Section Three of the Implementation Plan

Need	National Forum			
	Alice Springs, 1997	Cairns, 1998	Broome, 1999	Alice Springs, 2000
A dedicated chapter on Indigenous environmental health in the proposed National Environmental Health Strategy	●			
Binding of the Crown to meet local and State government environmental health legislation			●	
Employment strategies and recognised salary structures for environmental health work in community and government		●	●	●
Well resourced regional environmental health units to support resident community practitioners	●		●	
A career structure for Indigenous Environmental Health practitioners in community and government	●		●	●
Nationally consistent competencies and awards for Environmental Health Worker training and continuing professional education	●	●	●	●
Resources and support for the Indigenous workforce to implement the National Environmental Health Strategy	●			
National environmental health standards for Indigenous communities	●	●		
Guidelines for the provision of services to Aboriginal and Torres Strait Islander communities.	●	●		
'Fixing funds' incorporated into budgets for environmental health and housing needs surveys.		●		●
Technical solutions to community issues associated with housing, food safety, water use and waste water treatment.		●		●
Nationally consistent housing standards with rigorous inspection and certification procedures for building works.		●	●	
An Indigenous Environmental Health Forum with national representation and a place on the enHealth Council			●	
Promotional material on the roles and functions of Indigenous environmental health practitioners			●	
Resources and support to upgrade community food stores in accordance with the National Food Safety Standards			●	
Funded scholarships and cadetships for Indigenous practitioners at undergraduate and postgraduate levels				●

Expansion of professional education options (engineering, planning etc) after certificate level training				●
A national information data base be developed to provide resources to practitioners, students and agencies				●

Table 3: Summary of Indigenous environmental health workforce needs

identifies eleven areas for action in support of Indigenous environmental health and its community practitioners. These actions have been largely generated from the forums discussed above and therefore link strongly to issues identified by field practitioners across the years 1997-1999.

This scale of national policy direction brought with it a profile and set of resources never before accorded to this field of practice. Whereas at the 1999 national workshop Indigenous practitioners pressed for representation on government and environmental health professional decision-making bodies, the Commonwealth Government was, in the year 2000, in a position to establish and support a National Indigenous Environmental Health Forum. This Forum currently has Indigenous representation from each State and Territory and provides advice on Indigenous environmental health issues direct to the national enHealth Council (Australia’s lead agency in environmental health). Members of the Forum have a vital role in creating and implementing Indigenous environmental health policy, in determining research and practitioner support needs and in setting national direction for workforce development.

The Forum, along with other Indigenous environmental health activities auspiced by the enHealth Council in its Implementation Plan (enHealth Council, 2000a), strongly compliments a suite of existing programs redressing the historical disparities in environmental health standards between Indigenous and non-Indigenous populations. In the specific area of workforce development there is for example a range of programs and support structures that has developed outside of the immediate policy process outlined above. These developments are shown in Table 4 below.

The combined programs of support identified in Tables 3 and 4 represent concerted attempts by State and Commonwealth agencies and education and training institutions to respond to the poor environmental health status of Indigenous communities. But as

the following section exposes, the gains in no way reflect a profession-wide shift toward dealing effectively with Indigenous communities, nor for that matter, for building relationships and improved understanding of the issues confronted by Indigenous practitioners. Instead they represent the hard work and determination of a small but

Year	Program	Agency
1996	Third community-based training course established in Australia	Cairns TAFE
1997	A national education program established to support Indigenous students in a professional environmental health degree course	University of Western Sydney
1998	Existing Aboriginal environmental health worker training program in Western Australia upgraded	Pundulmurra College
1999	Aboriginal environmental health goals and performance targets featured in a State government 'Aboriginal Health Strategic Plan'	New South Wales Health Department
1999	Existing Aboriginal environmental health worker training program in the Northern Territory upgraded	Batchelor Institute of Indigenous Education
1999	Indigenous Health 'Special Interest Groups' established in National and State Divisions of the peak professional body of environmental health	Australian Institute of Environmental Health
2000	Indigenous environmental health policy statement released by a State government health agency	Queensland Health Department

Table 4: Recent workforce development programs

dedicated section of the environmental health profession who share an interest in bringing Indigenous environmental health and its emerging practitioner base out of the margins, and into the broader discussion and planning frameworks of environmental health professional practice. Elements of this profession and Indigenous practitioner union are explored below.

5.3 Disjuncture at Work

Workplace Expectation and Experience

In the introductory chapter to this thesis I outlined the types of practitioner and organisations delivering environmental health services and support programs to Indigenous communities. I also presented a view that the field of Indigenous

environmental health professional practice is ill-defined at this stage of workforce development. The findings of this research now highlight the various tensions students experienced working in this ill-defined professional area across community-government interfaces. Further it illustrates how the commitment and support given to students by workplace managers and peers can influence these tensions. For example, some State government health units around the country dedicated considerable attention and resources to environmental health programs in Indigenous communities. Senior managers of these units were interested in local Indigenous professionals developing and working with their own communities in ways non-Indigenous government employees in the past could not. These managers gave full endorsement to both educational and workplace professional development initiatives and encouraged community practitioners in new ways of working with community. Many of these senior environmental health professionals worked closely with their staff to secure Indigenous environmental health firmly on the agenda of the enHealth Council and the various State and Territory health planning divisions. Despite this, preliminary studies (Brown and Stephenson, 1997; National Environmental Health Forum, 1999) revealed Indigenous environmental health trainees still have a significant amount of work ahead in defining the professional-community interface within which they must work.

Non-Indigenous supervisors and colleagues across all public health sectors tended not to question the need for fully qualified Indigenous environmental health practitioners. There was however much debate over how mainstream their training should be. Once again, their level of historical engagement with environmental health development work in Indigenous communities usually determined the view of environmental health managers on this issue. Workplace managers and supervisors who had not worked extensively with Indigenous communities typically advocated for a completely mainstream and traditional training agenda, both at University and in the workforce. As one supervisor put it:

He [the trainee] should be an EHO first, and an Indigenous specialist second, that's what I perceive anyway, because I think in terms of his development, it's going to be more beneficial for him. If he's doing a degree in environmental health and he's isolated from the activities that we perform like in terms of our statutory obligations then he is missing out on some very important skills and knowledge development (ROI #24).

Supervisors of this persuasion were prepared to leave the student's transition into Indigenous community practice up to the student. To these supervisors it was preferable that the transition took place after the academic and professional training program was complete. Others suggested that the student cohort should be encouraged to work with their communities while they studied. This latter stance was argued for by the University and was based on advice from enrolled students. After all, students knew that their people would not wait until they were qualified before expecting them to use their position in government to the benefit of community.

This question of whether employers saw their trainees as either 'EHO first, Indigenous second' or vice versa was a real one for many students. It is explored further in the next chapter, but also rates a mention here because it raises a point of disjuncture between what students expected upon entering their traineeship, and what they actually found. For example, students recruited directly into State government training positions detected inconsistencies in the way their training was overseen and managed at the central departmental level when compared against their own regional office level experience. As these students perceived it, the Department intended that they receive mainstream professional training in the workplace. Their immediate supervisors also held this view. Many students were not entirely happy about this. However they accepted it for the knowledge and recognition it would bring them in the end. To support the professional training program, workplace supervisors developed in-service training and work programs that reflected this professional and mainstream emphasis. But the interests of the central office developed along the way, and students were later encouraged to work with Aboriginal communities on projects designed and managed from the central office. Most, if not all students, eagerly accepted this opportunity to enter the communities and talked of the experience in community, and the shift in thinking at an organisational level, in a positive way.

I think there's definitely more of a move towards Indigenous environmental health with [the Department now] wanting to get the other trainees involved who haven't got a project. So that's good because it gives us the practical environmental health that is pretty hands-on, which we haven't all had before. We've had little jobs like with water testing and stuff like that but nothing we can really sink our teeth into I guess. So I think by [the community-based] projects, they want to try and get

everybody involved and give us experience that uses the stuff that we've learnt at uni. So I think it's changed - for the better (ROI #5).

But this new layer of involvement and accountability brought with it some different pressures. There was now an expectation that trainees would work at the local level in mainstream professional development roles as expected in the first instance, while at the same time, work on projects initiated by head office. The concern for some students with this approach was that the Aboriginal projects were coming in over the top of everything else. One student described this inconsistency in the following words:

[The Department] pushes the mainstream involvement and I'm all for that. But every once in while, when they feel like it, the Department will come in here and...throw in their two bobs worth and expect us to drop everything, right when we've got things on the boil here - like legionella sampling - and you feel as though you are caught between a rock and a hard place (ROI #3).

The 'rock' here was the local work within their own professional environment and the hard place was the work they ultimately wanted to be doing, that is, environmental health projects in Aboriginal communities. This apparent wax and wain at the central level resulted in confusion over the direction the Department wanted them to develop. Adding to his previous point, the student remarked:

I think the biggest problem is...because the Department sort of put us on...we don't know if we're just ordinary trainee Environmental Health Officers or Aboriginal Trainee Environmental Health Officers. That sort of a distinction hasn't been made clear... When push comes to shove, everything is left up to the area health services to do the training...(ROI #3).

This student finished with a reference to the importance of the relationship trainees have with their immediate supervisors or the senior or principal environmental health officer as they are most commonly referred to in mainstream government agencies. Positive and continuous student-supervisor relations were of paramount importance to the satisfaction of students in the workplace. Whether students came to the professional training program with prior environmental health experience at a community level or they were recruited directly into the training program, they expected a certain minimum level of professional support and direction from their workplace supervisor. But as numerous students pointed out, the extent of support from supervisors and agencies

responsible for their on-the-job training was highly variable. At times, it was even non-existent. A few comments from student interviews and records of field notes demonstrate this point.

The first is the case of a student who took up paid employment in an urban health unit. Just prior to that, this student had completed a successful and fulfilling voluntary attachment with a regional office known for its attention to Indigenous environmental health matters and for its development approach to working with Indigenous practitioners. In his new appointment the student found the work environment to be far less supportive and that its programs did not even remotely relate to Indigenous concerns. This was despite one of the largest urban concentrations of Aboriginal and Torres Strait Islander people falling within its jurisdiction. Nevertheless, the student believed his supervisor was genuinely interested in providing him with a good professional training experience. Working against this was a high turnover rate of professional staff at the workplace. This meant the supervisor's time was heavily devoted to other management matters, a workplace feature common to service provision in rural and remote areas (see Wakerman, *et al.*, 2000, p. 36; and Williams and Cadet-James, 2000, p. 26). The student felt pleased that he was trusted to look after himself, but disappointed that the experience was nowhere near as challenging or fulfilling as he had experienced on attachment just months earlier. As this student pointed out:

[My supervisor] is a good one. He is not too concerned about keeping an eye on me, he knows I'm quite capable of working on my own as it were. He's pretty good at giving advice but as for setting up schedules for training and stuff like that I guess it's more or less left up to me to do it. When I haven't had that much experience in environmental health it's quite difficult to know what you need to learn and what is actually out there for you to learn from (ROI #10).

The second example is of a student who began work as an environmental health worker in his own community before taking up a position as a regional environmental health coordinator for community practitioners in a government health agency. This student talked of the difficulties he encountered when his first supervisor retired and was not replaced for a number of months. Over those months the student discovered the other non-Indigenous environmental health staff in the office to be not at all interested in Aboriginal and Torres Strait Islander issues, nor in his professional development. They

did not attempt to involve him in mainstream environmental health projects and he found it difficult to discuss problems of his own practice in Indigenous settings. This division between Indigenous and non-Indigenous practitioner roles was accentuated by the physical separation of his work station from that of the other environmental health staff. These circumstances combined to make it an easy decision for this student to remain segregated from his professional peers for the entire period. Nevertheless, in the time it took to fill the senior officer's vacancy, the student felt troubled about being left to fend for himself. He saw his time over those months as a test of his ability to survive in an uncooperative and uninterested work environment. In his interview he stated:

I would have been here for four to six months [when] the director of environmental health services left... So I was more or less left on my own for a while, you know to try and find my way. Like you know I was surviving. I was still working hard, I was still going out to the communities...and working with the Health staff out there. That was no problem but I started lacking in getting guidance on some of the other work I should have been doing... I wasn't getting any guidance or support from my other colleagues (ROI #16).

Students that entered the government sector to take up traineeships or regional coordinating positions rightly expected to work in a supportive professional environment. These students perceived governments to be so much better resourced and equipped to support them than the non-government agencies or communities from where they had come. But as more than one student discovered after moving to another town or region to take up government positions, guidance in the job and support from other professionals was sometimes limited. Cope and Kalantzis' (1997) assessment of contemporary Australian organisations helps to explain this poor interaction between some mainstream professional officers and their apprentice Indigenous practitioners. They claim that most modern workplaces have failed to manage employee diversity and have only fringe awareness of 'difference', tending instead to develop an organisational culture of 'similarity'. In the context of Indigenous employees working for large corporations, they do however cite some examples of employee/employer relationships recognise culture as always being different. Interestingly the best example Cope and Kalantzis (1997, p. 184) gave related to the relationship between a large mining corporation and the Aboriginal workers who were also the traditional owners of the land being mined. Similar examples of valuing difference are less well documented and

demonstrated outside of the rhetoric of organisational and professional charters within the professions, government bureaucracies and mainstream service agencies.

This research found Indigenous practitioners who arrived in mainstream environmental health offices for the first time, with overtly different cultural norms and social behaviours, inadvertently threatened the stability of the dominant workplace and professional culture. At times, this in turn resulted in a destabilisation of the professional development experience of the non-traditional government employee.

In some regions of the country Indigenous culture is better understood by the wider population. In these regions and further afield were some non-Indigenous environmental health professionals who chose to live and work alongside Indigenous colleagues and to tackle the health and environmental problems at local community levels. Cope and Kalantzis' concerns about mainstream professionals seeking 'sameness' in their Indigenous workmates were less obvious in these settings. Fred's story (not his real name) is one that illustrates a stronger understanding of difference between professional and apprentice.

Fred's Story

Fred had been employed in his community as an environmental health worker before taking up a regional coordinating position in State government. In accepting the position he was required to relocate over two thousand kilometres from where he worked in his home community. Furthermore the office Fred was to begin work in was a remote office and was without a dedicated environmental health officer. The nearest State health office with professional officers on staff was some 10-12 hours drive away. Fred had to manage the transition from community-based practice to practice in government without the immediate support of a professional colleague. He survived these workplace circumstances and managed to progress with his studies largely because of the high level of contact he had with a specific professional mentor and colleague in the regional office. Fred relied heavily on the mentor for advice and professional support via telephone, email and facsimile communications and through quarterly visits made by the regional officer. The situation proved difficult for Fred at times, but manageable. His success reflected partly on the strong commitment to workforce capacity building by the regional office and the efforts of the individual mentor. Even more so, it demonstrated Fred's own desire to succeed in his work of providing a conduit for community-based practitioners through to government, despite the challenging circumstances.

But not all 'remote' training and mentoring systems were as successful. In another instance a young Aboriginal man, without any previous environmental health training or experience, was recruited by a regional health office to work as a trainee in a remote outback town. But as often happens in remote quarters of the country, professional staff come and go at a regular rate (see Williams and Cadet-James, 2000 and Wakerman, *et al.*, 2000), and in this case it took a considerable amount of time to recruit an experienced environmental health manager. This resulted in a situation where the trainee, who had also relocated from his home to take the position, found himself without a qualified environmental health practitioner to work alongside of, let alone anyone in the agency who could adequately manage his traineeship. Needless to say, the lack of immediate direction and supervision and the total absence of the level of professional support and training expected by the student, resulted in him under-performing in his studies. And whilst the employing agency had few professional expectations of the trainee, it did become concerned about the trainee's performance after he began absconding from his work duties for lengthy periods of time. Ultimately the student requested a transfer to an office closer to his home and family and one which could provide adequate professional mentoring and supervision.

The track record of that remote office in supporting trainees did not subsequently improve. As an office dealing with remote area health issues it was in a strong position to argue to the central agency for funds to replace the trainee position. The central office was cautious however and held off recruiting a new student until the vacant position of qualified environmental health practitioner had also been filled. Within six months a highly qualified and experienced environmental health officer was recruited and was keen to support a trainee. The traineeship position was advertised locally but no applications were received. Through fear of losing the funds and the opportunity to start a new trainee in time for the academic year, a young Aboriginal woman was transferred from another section of the organisation into the position. This person was already studying and working for the agency in the area of Aboriginal community health. She was reluctant to move to environmental health, but felt her employer wanted her to take up this new direction. It soon became apparent this student was unhappy in her new field of work and found the academic requirements very difficult.

She struggled in the mainstream professional and regulatory environment and lamented the fact that this new job had little to do with Aboriginal issues, when compared with her previous work. She described how her expectation of the traineeship differed from the reality:

I thought the environmental health work would be more like getting into the Aboriginal community. I won't want to be involved in half the things that [my supervisor] does... Like going into court...I don't think I'd be able to go and do that... I felt I didn't want to be sitting around in an office each week. I thought I'd be doing more work in the field... After doing two years training in primary health care in community setting I am used to being out there anyway. I suppose it's different in this job but sitting in the office every day a lot was getting me down (ROI #2).

Accepting that the student simply was not suited to the job, the senior practitioner requested yet another new trainee. By this time central office was reluctant to re-fund any positions to the region, despite the potential benefits to its large Aboriginal population. The environmental health unit claimed it was in an ideal position to support a trainee, for there were now two qualified and experienced officers in the main regional office and another in place in a satellite office a few hundred kilometres away. Further they had more than six months to hunt out and recruit a suitable candidate for the traineeship before the next academic year commenced. A substantially more suitable trainee was found and recruited in enough time to gain a few months professional training before commencing studies. The agency was staffed appropriately and the environmental health team was able to work on projects in the region with potential to improve environmental health conditions in Aboriginal communities. The trainee performed well in his university studies across his first semester. But within twelve months of this latest trainee taking up position, senior staff changes in the organisation resulted in the steady but rapid departure of one professional member of the environmental health team after the other. Eighteen months into the student's traineeship he was left under the care and direction of just one employee, herself a graduate of only six months. With word that the remaining professional member of staff was also looking to move on, and no application received for the other vacancies, the trainee was deeply concerned that he would soon find himself in exactly the same unsupervised and unsupported situation that the original trainee faced.

This situation raised issues about continuity of professional mentoring and supervisory staff, particularly for trainees in government agencies in rural and remote regions of Australia. Community trained environmental health workers who shifted into government coordinator positions talked of the set backs they experienced each time professional staff left positions in the regions. These students were experienced practitioners and had a wealth of knowledge about their own people and the localities in which they lived. They were, however, not accredited environmental health professionals and for this reason did not hold senior positions in government agencies. When new senior staff arrived to such remote areas for contracts of one or two years, the local Indigenous practitioners resigned themselves to the 'training of yet another boss' (Field Notes of Western Australian visit, 98). Quite often Indigenous practitioners report that their professional colleagues only just became useful as they were preparing to leave again for the comforts of a larger regional centre or, ironically, to go back to the big city to take up senior positions overseeing projects in remote area and Indigenous health.

Despite some of the problems government trainees experienced, most agreed they had access to good facilities and their employers were quite supportive of the concept of further professional education through the degree program. As one student put it:

How well we do all depends on the support amongst other things. The good thing about working for [a government department] is they are very supportive...towards our position and our training down at uni and that's something I really appreciate. Compared to situations that some other students are in, some of them are not getting the support from their workplace and not having the facilities and all of that (ROI #16).

This student was referring to his perceptions about, and observations of, the work of some of his peers based in community councils and in certain community controlled health organisations. In the above instance he described a situation where students who entered the degree program expecting their employers to be supportive of their new professional direction and to demonstrate that support with weekly study time and block release periods to attend the compulsory residential sessions on campus. My own field notes hold at least one account of a student whose employer chose not to allow the student to attend her first residential workshop session after earlier agreeing to her involvement in the program. The students' supervisor had had a change of heart about

supporting the student when he realised how much work his own team had to do across the coming year and felt that he could not spare staff time to attend ‘unnecessary professional development courses’. In other cases, lack of practitioner support was demonstrated less dramatically but revealed systemic issues for community-based practitioners who planned to study higher qualifications while at work. Here students report how they were prevented from making effective use of office resources for professional development purposes. This restricted their access to computer and printing facilities, as well as telephone, facsimile and copying equipment for individual study and for communicating with peers and the University.

Outside of community practice, government students with little practical experience reported support for their academic pursuits as very positive, in that most supervising staff were very interested in seeing their trainee gets through the degree program. As supportive as this appeared, there was a point at which traineeships that over-emphasised academic progress did so at the expense of other important learning opportunities grounded in experience and practice. This problem was amplified for students who had reached the final stages of the academic program without the benefit of a solid workplace and professional development program in parallel. As one advanced student pointed out:

When I first started [the training program] I thought that...after spending a few years here...that I would be like a pretty competent sort of EHO...who was still going to uni. But lately I've been...more like a uni student who does a bit of EHO work and it...doesn't do too much for your confidence a lot of the time (ROI #14).

Different supervisors utilised their Indigenous staff and trainees in different ways. Some were put to the test in the field earlier than others. One student who had performed strongly for two years in the academic side of his program lamented the fact that he had gained very little field experience, stating:

The only things that I would go out by myself is for swimming pools. I've got to do a lot of reading just to get the background knowledge, but I feel comfortable doing the pools. I'm not too sure what else I can get into (ROI #11).

The sort of work this student was involved in by himself was of a monitoring kind. In this case it was monitoring the water quality of public swimming pools across peak usage periods. He acknowledged that not being fully qualified meant that he did not have regulatory powers to respond to certain issues and therefore was limited in the forms of fieldwork he could do. But as another student discovered, environmental health work involves much more than regulatory responses to problems and there were many aspects of the job that a trainee could be given management over.

I find I'm constantly going to [my supervisor] asking 'have you got something for me to do?' Getting stuck with like the mailout and just writing general basic letters to councils. I would prefer to be out in the field learning than just filing... I think it's just the fact that we are not qualified enough to do anything, and I think it's a matter of waiting for someone to have faith in you to actually be able to go out and do stuff. [My supervisor] is starting to realise that I can speak to people and now he's sending me out to more things. Where as before I was, I don't know, I guess I've been left behind (ROI # 12).

This student made reference to the fact that colleagues and supervisors, charged with the responsibility for professional training, often failed to include trainees in important field activities. Numerous trainees talked of their disappointment at missing out on valuable learning opportunities and of being 'left behind' when significant field based investigations came up. As one student in a training program stated:

Reading books and that sort of thing doesn't really explain to me too much how the job is actually done. As for being told how to do things, you can listen for so long before your mind falls off the conversation (ROI #10).

For this student, a traineeship that did not capitalise on important field activities could not allow students to apply the knowledge and skills from their academic program into their professional work. In this respect, student expectations that workplace training program would be effectively linked to their academic program, were not met. Like many other trainees, this student held concerns for the extent and quality of his professional development. Despite being employed in a State-wide program that promoted the traineeship as offering students 'a comprehensive professional training experience', most students raised concerns about lost learning opportunities in practice. Excerpts from two student interviews help to make this point.

One thing that I have been a little bit disappointed about at times is...when I have asked [my supervisor] specifically...if I can get involved in more significant stuff you know. I want to be going out and you know there are times when [the EHO's]...know they are going out and doing stuff that I have never done before, and they don't think '...we should take him along and show him.' Maybe it's just because I've been here for so long and they just assume that I've done it already (ROI #14).

It seems to be the case that people have been too busy to come along and grab me when they are heading out on something important. There was a food poisoning outbreak a few weeks back and my Director called in the 'Foodies' to talk about what was going on. But they totally excluded me from it. It's something that I have got to learn anyway so it would have been a good case study. Somebody brought that to her attention afterwards and one of the Foodies pulled me aside and said, 'well this is what is going on, this is what we're doing' (ROI #10).

For this group of trainees, the lack of structured workplace training was compounded by the fact that they had only limited exposure to work in Indigenous communities.

Identity and the Job

In developing an understanding of the importance of 'identity' to Indigenous peoples in their work it is useful to explore what attracted them to the field of practice in the first instance. In the case of Indigenous environmental health practitioners at University of Western Sydney there were for example students who took up the training in environmental health with very little idea of what the practice entailed.

I had no idea of what was involved. I didn't know about this sort of job, environmental health officer...no idea at all (ROI #11).

Despite having poorly developed understandings of the nature of environmental health work, this group of students tended to see the professional training as an opportunity through which they could ultimately apply newly developed skills and knowledge to the environmental health needs of their communities, and to Indigenous populations further afield. They were generally attracted by the opportunity offered to develop a professional capacity, but equally, by the prospects of utilising their professional and technical expertise to make sustained health improvements within Aboriginal and Torres Strait Islander communities. As the following two excerpts of interview demonstrate, new students with only a vague understanding of environmental health

practice, were able to point out the opportunities an environmental health training program afforded them and the communities in which they would one day work.

...the prospects I think are really good, coming from a health point of view. Because it is sort of holistic in that you are looking at a lot of things. And of course I can tie Aboriginal health in with it as well... That's what sort of pointed me to the job (ROI #8).

I had a really good think about what I wanted to do and I had an idea...that I wouldn't mind going up to the Northern Territory or Queensland and working in Aboriginal communities, in Aboriginal health and that sort of thing. I've always wanted to do a job you know where you feel good about yourself doing your job, and you feel like that you are making a difference...in Aboriginal communities (ROI #14).

There were other students for whom attaining a professional qualification in environmental health was a means by which they could tackle problems they had previously experienced. Here, students had beforehand been a part of a program or had observed activities that impacted on Indigenous populations but were dissatisfied with the approach or the outcome. One student explained just one aspect of his previous work that influenced him in taking up professional training in this field. He talked of his experiences as an Ordinance Officer employed by a large regional city council. The town's Aboriginal population increased considerably over the hotter months as families 're-settled' from a number of smaller districts and towns further to the west of the State. His work, he explained, was to:

...to enforce council by-laws and respond to complaints. But a few of the problems about were really to do with [Aborigines] drinking in the park which was an alcohol free zone and I thought that Council went around it by putting a local kid in there to do the job of moving people on. Because the park is right in the main street and with [there] being...a big field day in November with lots of tourists, the last thing [the council] wanted to see was all these blacks sitting around the park drinking and fighting (ROI #3).

This students' dissatisfaction with the approach of council and his own limited capacity to negotiate a more respectable solution for those in the park were two of the influential features of his earlier work that encouraged him to take up further education. When this further education opportunity happened to be professional training in field of environmental health alongside other Aboriginal students, the student felt he was taking the most appropriate next step.

Other students perceived studying the course as absolutely necessary for them to not only increase attention to environmental health issues in Indigenous communities, but also to elevate the status of Aboriginal and Torres Strait Islander practitioners who had been working in the field at the community level for some years. Mostly these community-based practitioners worked without recognition or due respect from the broader environmental health profession, or from related health professionals, policy makers and funding agencies. This low status of Indigenous environmental health practitioners had been identified by Clark (1999, p. 140) as unchanging since the time of the first Aboriginal hygiene workers in the Northern Territory in the 1950s.

Identity from the perspective of an Indigenous person striving to improve the health and well being of community people was one element to their work. The other was concerned with elevating the profile and identity of community-based environmental health practitioners. Students of this type who moved out of community-based practice to take up positions in government agencies described the move as providing valuable learning for themselves, as well as opportunities for their communities. This was often not without personal sacrifice. One student showed signs of considerable distress when talking about his recent experiences and concerns about working for one government department. In recounting his personal cost, he stated:

I have been here seventeen months. I would like to see a lot of other people from community try...to move into the environment I did...and see how they would survive without family and friends. See how long they last. I'm trying to be strong but you can only take so much (ROI #16).

In many of the student responses, the theme of identity was closely associated with the notion of collective struggle. Students identified their work as being more than simply about their own career advancement. They talked also of it providing an avenue through which they could purposefully contribute to their people's struggle for improved social, physical and cultural well-being. One student explained for example how important it was for him that his employer supported the extension of his work in environmental health to include regular meetings and discussions with young Aboriginal inmates of juvenile remand centres and prisons.

We are lucky enough too because...[our director] is really keen for all the Aboriginal workers...to be present and have a face in the juvenile justice system, which is good. So, we sort of got support at the top end of the scale (ROI #8).

Explaining the importance of these visits further, this government employee saw his studying and training in a professional field as a demonstration that Indigenous people can both survive in a 'white' system and have the respect of the communities they represent. In this sense he believed a large part of his professional work would be to provide a new sort of role model to young Aboriginal men incarcerated in the local prisons. He stated:

Well, up until now...the only role model that Aboriginal kids have had have been sports people, and that's where they have always looked to. So if you take it one step further [you can] look at healthy life styles and that sort of thing. And then you can use people branching out in professional areas [as role models]. I think me personally it's a matter of the children having choices and knowing that there is things they can do. If they are interested in whatever then there are people they can contact. I think that's important (ROI #8).

The rewards for most government students came when they applied their new knowledge and skills in community or with community workers in ways that they felt made a difference. The student who earlier described working for government as a constant struggle, identified his regular teaching commitment to community health worker students as highly rewarding. He valued this extra dimension to his work because of the potential it created for the integration of environmental health practice with other health care programs in communities.

Even though I'm going through a crisis [at work] at the moment, there are things...I feel good within myself about doing [like]...talking to the students. It was a good session. I was talking about environmental health from the communities' perspective. The students were from different communities...so yes, that was good (ROI #16).

Identity played a major part in the way government students saw their work with community residents and other community-based workers. Until now in this chapter, identity has been discussed in terms of the way students identified *as* Aboriginal or Torres Strait Islander people and what that identification meant for their work in or with government. This kind of identity overlaid the personal and cultural elements of a

practitioner's identity. The research however also established the significance of another form of identity to Indigenous practitioners. This second form of identity related to the special relationship students formed around a new and developing area of practice; a practice they were highly committed to and which was new to Indigenous communities, at least in its current form conducted by Aboriginal and Torres Strait Islander practitioners. This level of identity was concerned with how students saw their role and purpose, how they made connections in community and what approaches they adopted to develop stronger community understanding of the links between environmental conditions and health. Building on the previous student's comment, the following excerpt signals the importance Indigenous practitioners placed on making connections with community-based practitioners from a range of affiliated areas of practice, whether they were in training or already qualified.

I beg our Aboriginal Health Coordinator to take me to the TAFE College with him so I can talk to Aboriginal students in other courses. I have [also] attended a few of the Aboriginal health education officer meetings and things like that. Just so that people know who I am and they know what our section does and they can confront us if they have got a problem (ROI #12).

Making connections with community and community practitioners was particularly important to Indigenous environmental health students. After all, up until they embarked on their degree studies, there were no professional Aboriginal and Torres Strait Islander environmental health role models within government or community anywhere in Australia. These students were therefore breaking new ground. They were required to develop and define the dimensions of their professional practice in ways that gave them credibility in community *and* gained them recognition and legitimacy in mainstream professional circles. Negotiating their role in government with community necessitated the bringing together of their personal and cultural identity with their evolving identity as environmental health practitioners for Indigenous communities. But, as most students described, this negotiation was difficult to do when community representatives and practitioners associated them with the same government organisations that had for so long failed to work effectively in community.

Two examples of disjuncture in cultural and professional identity are given below. The first is an account of a student who found out only during a scheduled visit to a

community that there had been problems with the community's water supply. As he discovered the community had been without adequate supplies of drinking water for approximately two weeks in the build up to Christmas. The practitioner's distress over the situation was compounded by the fact that despite making previous visits to the community specifically to develop links and to offer his support, the community chose not to contact him for assistance in resolving the water problem. As the student stated:

[The community] didn't know how to approach [the water authority] and when we did go out and the link was made, something happened. But when they didn't have any water they didn't contact us. I don't know, maybe they thought we wouldn't do anything. I think there is a perception out there that we'd blow in once in a while to resolve some things. We were out there one day, probably for only two hours, and then we turned around and came back. If we are going to keep doing that, then they are going to by-pass us again... We need to build our links to the community up slowly and reliably (ROI #3).

A second notable case of disjuncture between the cultural identity of Indigenous environmental health practitioners and their work in community occurred among students involved in government initiated surveys of community needs. Research into Indigenous environmental health (as with Aboriginal public health research before it) has for some time been heavily weighted toward issues identification (see National Aboriginal Housing Strategy Working Party, 1989; and Gracey *et al.*, 1997). Large scale government sponsored surveys of environmental health conditions in communities led to pressure being exerted by community managers on to Indigenous practitioners involved in administering the survey. The credibility of the workers was called into question when community leaders saw the 'face' of the survey as the person accountable for bringing about change and improvement, once the problems were identified (Stephenson, 2001, p. 76). The larger the survey, the greater the expectation from community that resident environmental health practitioners and regional coordinators would act on the ground. Indigenous practitioners and their communities saw little value in researching the extent of problems in communities when the problem was already known. Indeed this research confirmed that 'issues identification research' could be counter productive for field practitioners because it undermined their reputation in community, lowered practitioner morale in working at the cultural interface between government and community, and consumed scarce funds. Indigenous practitioners therefore saw the importance of changing research objectives and designs

to research that could be linked directly to improving environmental health conditions in communities.

Aboriginal and Torres Strait Islander practitioners employed in government were not the only ones to feel the pressure of working between two cultures or to experience disjuncture associated with identity. At the community level too, environmental health practitioners found themselves in situations where their cultural identity and allegiances were questioned. An example given by one student centred around his involvement in negotiations with a family member to improve the condition of the food preparation area in a community store. The practitioner explained how he was aware that the kitchen was in poor condition but when a number of food poisoning events were linked to the eating of food prepared at the store, he felt he needed to do something. He had made previously attempts at talking to the store owner about improving hygiene in the shop. His approach was to supply the shop keeper with as much information as possible for him to take his own action. But the situation did not improve. Eventually the practitioner enlisted the assistance of a State Health Department environmental health officer to help him assess the store and advise on priority food safety issues. They both agreed that an official notice should be served on the proprietor of the store. When the store owner received notification of the remedial work required, he became very upset with the community worker. As the resident practitioner explained:

His father's father and my father's mother are brother and sister. His grandfather and my grandmother were siblings. That's now closely related we are and he walked up to the office and called me 'a white man lover'. And I said 'what do you mean by that?' and he started blowing his head off. He said 'You let all these white people put all these shops up and you close us down'... I was on the defensive all the time, I couldn't stand face onto him, that's how mad he was. I just took it all in, just didn't retaliate in a bad sort of way, and when he calmed down I just walked in and pulled out my diploma, threw it in his face and sat down and explained it to him. I said 'I came to you personally, talked to you in our own language and explained to you about the problems the EHO wanted [fixed]' and said 'if you had any problems you could always ask me.' He didn't even say sorry. He just got up and walked away...(ROI #18).

The store owner did not fully understand the health risks associated with his food handling procedures or the implications of the unhygienic environment in which they occurred. When the official notice came from the Health Department, the store

proprietor felt his enterprise was under threat. To make matters worse, the store owner perceived the threat to come from a relative who had sided with the regulators in State Health. Reflecting on this, and other experiences on the job, the community practitioner felt that he was generally able to tie in his knowledge of environmental health with cultural life. As he explained:

I try to marry my work area with the cultural aspect of life. Sometimes it really works out really good for me. But [with the food shop] the last time I approached him we had an argument. I said to him 'right, I'm approaching you as a family member, brother, and also as an environmental health worker to explain to you why this needs to be done.' I've always used putting that cultural aspect before my work, so that I can get the attention that I need (ROI #18).

In other community settings the way practitioners incorporated identity and cultural relations varied. One community practitioner for example talked of his approach of joining in on the community garbage collection rounds as a means of staying in direct contact with the people and their concerns. He recognised the sorts of problems residents of his community had with vermin, leaking septic tanks or blocked sewage pipes, and uncollected garbage meant that they had to be attended to quickly. It was important to this worker that problems be prevented from getting worse, as the health of his people could otherwise be very quickly threatened. But he also explained his concern about the lengthy and bureaucratic system used by his own community council to process residents' complaints. His way of communicating with residents allowed them to side-step the official process and for him to deal with the problem before it, and the tempers of the residents, worsened.

I just like to go with [the garbage collection gang] on Monday and Wednesday mornings just to have a general look around at the community. If anybody has any problems I'm there where they can speak to me rather than them [taking]...a long walk up here. By the time they get here, if their problem is bad, they'll have a bad temper and be pissed off (ROI #17).

This practitioner was promoted to a supervisory role when he completed his environmental health course at TAFE. Despite this he held strong views against supervisors who did not identify with the concerns of the people in the community or the workers doing the dirty work. He explained how important it was that he adopted a

hands-on approach to his job, both to ensure the work got done and to maintain the respect of his work team.

I'm pretty lucky with my gang. Like...you know, I don't 'lord' over them. That's why I like to work with them sometimes. Just to show them that...I'm not too good for that sort of work. If I want them to do a job, I have to get in and show them the job. If I'm willing to do it, then they will do it too (ROI #17).

Managing Multiple and Conflicting Roles

Earlier in this chapter I positioned Indigenous practitioners involved in this research into six different classifications. These classifications were based on criteria such as whether they worked for government or community, whether or not they had environmental health experience prior to taking up the degree program, and whether or not their employment was conditional on them satisfactorily progressing in professional studies. The workplace role of Indigenous environmental health practitioners is not uniform across each of these classifications. This section is not concerned with exploring each of the classifications in detail. Rather it draws on the collective experiences of Indigenous environmental health practitioners to illustrate how the task of managing multiple and conflicting roles contributed to the demanding and complex nature of their work.

In beginning this exploration, it is useful to briefly return to the first two themes of work-based disjuncture covered in this chapter. Elements of multiple, and sometimes, competing or conflicting roles can be extracted from each of the earlier sub-sections. The first sub-section for example contained numerous references to the conflicting position some student practitioners found themselves in with regard to the focus and intent of their professional training program. This was most evident in students who had no previous experience in environmental health practice before taking up a professional training position in government. As mentioned in that section, students were often confused and sometimes expressed dissatisfaction over the lack of professional training and field exposure in dealing with the needs of Indigenous communities. There were also examples of confusion amongst some of the supervisors of the training practitioners, some of whom had very little experience themselves with

the environmental health concerns of Indigenous communities. Students in this situation reported accepting the need for skills and knowledge that would give them credibility in a mainstream professional setting, but also stated clearly the need for additional professional exposure to community issues if they were to effectively address problems in those settings in the future. Their eagerness to have workplace-sanctioned dealings with the local Indigenous populations at the earliest opportunity was linked to their awareness of the needs in communities and their understanding of community expectations of their work in a government health agency. Students were highly aware that if they were local and connected to, or even known by the community, then community representatives would more likely seek their help as problems arose (Druett, 2001, p. 56). This sentiment was echoed by two trainee's comments.

We had one house...in our area [that] came to our attention through [the Aboriginal Health Coordinator] who felt comfortable I think coming to me and saying you know, 'this is the problem, what can we do about it?' So then I could pass that information on to [my supervisor] whereas [the coordinator] would never have gone straight to him (ROI #12).

Just last week [I was contacted] actually. The situation is they've got a Women's Health Day coming up in...the community... They're having a health day for women and every sort of health they can think of, like: sexual health, mental health, pre- and post-natal health and for environmental health...they asked me... So yes, immediately their reaction was to ask me...(ROI #5).

Organisations that were less supportive of the trainee taking up community initiated projects risked contributing to personal and cultural conflict situations for the trainee. These situations in turn led to professional dilemmas for trainees and a questioning of their role and value to the organisation and to the communities. There were for example instances where students felt the State did not want them initiating contact with communities. As a trainee pointed out:

I haven't been too involved in the communities in this area as of yet because, so I have been told, it is too political. There is a big brick wall in between the Aboriginal community and the...health service for some reason. I think it has more to do with a government agency trying to force Aboriginal communities into doing things the way the agency wants them done. Instead of the agency meeting the community half way and saying, 'well this is what we can do for you or this is what we have, what do you need?' (ROI #10).

In this instance the student was frustrated because the sort of role he thought he had been employed to play – that of broker of information across cultures – was not even being considered by his employer. The student was troubled by the impasse between the State and the Aboriginal community and the fact that the field of environmental health was replicating and perpetuating the deadlock found in other fields of health and community service delivery. He was disappointed that the organisation was prepared to pass up a professional challenge from which a lot could be learned, let alone accomplished in the community concerned. Here the student experienced first hand what many of his peers had at some stage confronted during their professional training experience; that is, the realisation that even though the organisation claimed to be strongly committed to meeting the needs of Indigenous populations, its decisions and actions did not always support the rhetoric. Government agencies that on the one hand espoused a high level of commitment to Indigenous health in their corporate and strategic plans, but on the other hand did not deliver in daily programs, threatened to undermine the credibility of students in the very communities they were employed to work with. One student saw these sorts of internal planning documents and cross agency agreements as only paying ‘lip service’ to the needs of Indigenous people, stating:

Despite how there is all these partnerships like with Aboriginal [agencies] and [Government Departments], and all this talk of ‘we want to do this for Aboriginal communities’, at the end of the day I sort of think the commitment in reality isn’t as big as what it is on paper (ROI #14).

Here the discussion on multiple and conflicting roles, linked with the second theme of disjuncture explored in this chapter, that of ‘identity’. It was key for government students to have a role in community that allowed them to identify firstly as an Aboriginal or Torres Strait Islander person. Secondly students were interested in developing the knowledge and capacity of the community members they interacted with. Thirdly, Indigenous practitioners in government talked of creating understanding among non-Indigenous practitioners working in communities and of building bridges between government and the community. That kind of brokerage role emerged as an important function for both the inexperienced and experienced practitioners alike. As the following statement confirms, the sort of work students felt was important to the

success of government projects in communities revolved around effective communication between the State and the community representatives. They saw themselves as playing a useful role in improving these relationships.

...yesterday...I just had a meeting with [the] Land Council and there was a couple of fellows there from Public Works...We were talking about buildings and soil classification and I thought 'shit I just learned all this stuff', so normally I just sort of sit back and listen but I was actually really involved...It was good because there was...the chairperson for land council and then...these two blokes with public works and there's me in the middle. So what they were saying [the chairperson] was struggling to get a hold of, and I was sort of trying to break it down for him, like so he can understand it (ROI #13).

Glimpses of the extent to which Indigenous environmental health practitioners assume roles beyond those typically outlined in job descriptions, are peppered throughout this chapter. There have been cases of government trainees promoting environmental health to Indigenous Health TAFE students and examples of trainees taking up support work in a wider social environment such as being role models to Aboriginal juvenile offenders. There were also accounts of community-based practitioners explaining how their role had expanded to include individual counselling and problem negotiation for families as they earned the respect and confidence of community members. Resident environmental health practitioners became increasingly recognised and valued for their community contributions, outside of the immediate scope of their work. But with this increased recognition came ever-increasing expectations of community practitioners. Most community-based practitioners identified this as a major predicament for the sustainability of their work in community. Resident environmental health workers found for example that official workloads increased significantly as they completed their TAFE qualifications. With the expanding of their unofficial or informal community role occurring in parallel, the demands of these combined obligations left the practitioners with little time to dedicate to their academic pursuits. As one student stated simply:

I might have a problem continuing with my studies next year. I've too much work [in the community] and nobody else wants to do it (ROI #17).

The first wave of trained Indigenous environmental health practitioners are now working in Aboriginal and Torres Strait Islander communities. However a large

percentage of communities around the country are still without a resident environmental health worker. Rarely is there more than one practitioner per community. Considerable demands are therefore placed on resident practitioners at the local level. As the following excerpt from an interview depicts, the demand on resident workers can increase to a point where they become overwhelming.

I'm at that stage now where I think I've done so much for the community that they are too dependent on myself. It's come to that stage where on the week-ends I pull my phone off the hook and take off. Because I've got no free time for myself. People are just too dependent and expect too much from me. Sometimes I think I'm giving them too much time and not enough time for myself. I suppose it's all what I'm understanding really. Once you have that experience of expressing your view and making information clear for other people, then they become dependent on you to do it for them (ROI #18).

This community-based practitioner was increasingly being approached to do much more than environmental health work. For example, he applied skills in conflict resolution he developed at TAFE to relationship counselling across the broader community. Later he was nominated and elected onto the Community Council. In his expanded role the practitioner took the opportunity to act as an advocate at higher levels of government for environmental health improvements, and to seek support from other sources.

Whether they were community-based or working in government, the other significant responsibility for a large number of Indigenous environmental health practitioners was to engage in multiple levels of advocacy. As explained in the 'Policy and Program Context' section of this chapter, Indigenous environmental health at a national scale had received considerable attention over the preceding four to five years. Indigenous practitioners from each State and Territory now sat on a national forum which met four times a year and made direct representation to the National enHealth Council. Annual Conferences and Workshop dedicated to Indigenous environmental health issues have also occurred each year since 1997 with some States and regions conducting their own specialised workshops or developing local policy. The issues and work of Indigenous environmental health practitioners have quite rapidly become the centre of attention in some State and Territory jurisdictions. Indigenous practitioners have responded in good faith to this sudden surge of interest and have worked with non-Indigenous environmental health practitioners, managers, policy makers, program designers and

funding agencies to set priorities for action at the community level, and identify mechanisms for support at local, State and Federal government levels. Advocating for environmental health improvement in Indigenous communities and setting the agenda for change in government proved challenging for most Aboriginal and Torres Strait Islander practitioners. Attending and presenting at forums on regional, State and national scales extended their roles considerably. At times these activities competed for valuable time against obligations to their local communities. As a non-Indigenous program manager explained it, the Aboriginal staff in a regional health unit played:-

...a considerable advocacy role and an increasing proportion of time is being demanded for advocacy from other EHWs, external agencies, and within the [workplace] itself... Various needs related to the skills necessary for effective advocacy have been highlighted, including: public speaking skills; expertise in running and participating in meetings; skills to use equipment such as overhead projectors etc; and management of time demands and response planning (Government Manager, in enHealth, 2000b).

In addition to these complex and challenging work environments there were the constant pressures of family life. As every report on factors affecting the performance of Indigenous people in academic programs and professional practice reveals, the impact of family circumstances is significant (see for example Williams and Cadet-James, 2000, p. 21 and Wakerman *et. al.*, 2000, p 18). One student made this point simply.

If...[you have a] problem with your family for example, it effects your mind, it effects me and it effects the things that I do. It's straight up really, because if something's not right in the family then something's not right with me. That will definitely effect whatever I do at work...(ROI #19).

Examples of the sort of private anxiety Indigenous practitioners contended with in their work varied considerably, but the following account gives some insight into the extent to which family pressures weighed heavily on the minds of practitioners.

A lot of the things that impact on Aboriginal people is family. All families are extended and I have a cousin who has grown up with me and he's gone off the rails a bit. Mum basically raised him. I try and keep an eye on him and see how he's going to try and allay her concerns a bit. She obviously thinks about him a lot and to a degree it sort of affects me. No-one now knows where he is. He ended up in jail at one stage and Mum went to court

and bailed him out and looked after him but he's got a drug problem. He seems to have disappeared off the face of the earth for the last few months which...affects me to the degree where I'm trying to juggle work and assignments and worry about me mum and other people too. He's like a brother so I have a responsibility to him (ROI #3).

Stories of the distraction from their work due to a cocktail of problems at home were ever-present in my discussions with student practitioners. Their accounts of family life included cases of drug addiction, alcohol and other substance abuse, crime and violence, suicide, child abuse, and abnormally high rates of mortality and morbidity. My field records contain an account of a meeting I had with a group of 8-10 practitioners at which a big part of the evening was spent mockingly swapping stories of attempts at suicide by family and community members. This experience was disturbing for two reasons. First, because the group found it necessary to use humour to mask their deep distress over what was, and remains today, a serious problem in each of their communities. Second, because I had to sit on the sidelines knowing that each contributor was avoiding telling the stories of those who had been successful in taking their own lives.

Knowledge and Practice Allowed and Disallowed

Many Indigenous environmental health practitioners viewed working in government as a paradox. They saw government organisations espousing the rhetoric of Indigenous health as a priority area but doing very little on the ground to improve environmental health conditions in communities. As a result Aboriginal and Torres Strait Islander practitioners in these agencies often fell short of meeting their own progress targets in communities. At an individual professional level, they worked with non-Indigenous colleagues and supervisors who wanted to see improvements in communities but who were unable to adequately support Indigenous practitioners in tackling non-mainstream environmental health problems.

The supposition here is that if advances in environmental health conditions of Indigenous communities are to take hold and be sustained, then Indigenous practitioners will require the personal and professional space to trial new ways of operating. This will require genuine and concerted support from the organisation. Some practitioners believed that government agencies simply could not provide the type of support they

needed to work effectively with community development programs. For this reason these students did not even attempt to work from within government. One such student explained how she was concerned that working for the State would naturally limit her powers of expression on urgent community health matters.

I think that's why I chose to be where I am at the moment without being part of an organisation because as a community person we have more say and can work from the community up instead of the other way and you are freer to express yourself (ROI #6).

Others saw working for government as a means of tackling the system from within. Their work was as much about changing government systems that have for so long served the interests of the dominant society as it was about environmental health improvement in Indigenous communities. This group was interested in influencing mainstream policy and practice so government would more responsibly and more effectively attend to the issues and concerns of those who had been disadvantaged and marginalised through a combination of successive political, historical and social circumstances (see Druett, 2001, p. 46-47).

Members of the environmental health profession have only just begun to form the basis of an understanding of what it might mean to work more effectively with Indigenous practitioners on Indigenous environmental health issues. Non-Indigenous supervisors and peers have responded to the challenge with varying degrees of commitment and self reflection on what it might mean for their own practice. 'Cross-pollination' was a term used by one supervisor to describe the transactional nature of learning that took place between his Indigenous trainee and the rest of the professional environmental health team under his leadership. The following statement typifies the way many supervisors viewed this kind of relationship.

[He] has taught me a lot of things and I have taught [him] a lot of things and we still have a lot of things to teach each other. I tell him that all the time (ROI #24).

Some students criticised this level of transaction as being insufficient for supervisors and colleagues to fully understand the workplace and professional practice problems from the perspective of Indigenous practitioners. For workplace supervisors to not have

a clear understanding of the trainee's problems in turn meant they were ill-equipped to respond effectively to their needs. Some students perceived exchanges with their colleagues as either superficial or insincere. They reported being frustrated at what they saw as the limited responsibility of co-workers to uphold their end of the cross-fertilisation bargain. As one student stated:

If we are going to work in this type of organisation...people have got to understand where we are coming from as well. It is fair enough to understand what people are trying to teach us, but the people trying to teach us stuff have got to try and understand where we are coming from too (ROI #10).

This concern of Indigenous students in many a mainstream government workplace matches up with Solomon's view that workplace culture has 'meant that diversity, while inevitable and central to work and the worker, still has to struggle against the seduction of sameness' (Solomon, 1999, p. 125). The student's comment also exposes another dimension to the struggle. Like participants of any struggle, this group of practitioners accepted that some personal and professional sacrifices were necessary for the furthering of their cause. Some students were troubled and uncertain about the extent to which they could directly advocate for or indeed make changes to the systems and policies of government. For practitioners new to government practice and its bureaucratic systems, this uncertainty was even greater. Indigenous students working in government developed over time a strong sense for how their organisations and their environmental health colleagues reacted to the needs of Indigenous communities. Some felt they could openly discuss key concerns with their professional colleagues while others felt vulnerable at the prospect of speaking their mind. This latter group feared their critique of the existing system would jeopardise workplace relationships along with their long-term job security in government. As one of the many younger training practitioners involved in this research pointed out, the dependent nature of his training agreement meant that he felt guarded about speaking out. Because of his limited experience in the organisation, this student was uneasy about the sorts of action he could initiate in his community work. And because of his dependent status in the organisation, he was also wary of over-stepping the mark in his community advocacy role.

At the moment like I've still got the trainee tag associated with me... Maybe it is confidence, I don't know, but I still sort of question what I'm really allowed to do sometimes, you know. Like how big am I allowed to make things and how much of a stir am I allowed to cause?...I've tried to...cruise through without causing any waves and there have been a lot of times there I have bitten my tongue and not caused any waves. But there's going to be a big swell when I have got my degree (ROI #14).

Being junior and dependent offers a partial explanation of why some Indigenous practitioners could not openly critique their organisations' programs and policies. Another explanation comes from students observing the results of everyday practice and decision-making in government departments. Many students believed that government simply did not cooperate with community and in so doing contradicted their own corporate plans and mission statements. Many of the Strategic Plans of government committed health agencies to work in partnership with Indigenous groups. One Health Department's strategic plan cited 'working partnerships' as 'essential in providing equitable access to appropriate health services that address the issues underlying the disadvantage of Aboriginal people and communities' (NSW Health, 1999, p. 6). Yet one student described how little activity he saw on the ground in support of these words.

I'm more or less being stopped from approaching the organisations in the communities because of the difficulties the health service is having working with [them]... I'm not too sure, but I guess they are attempting to build bridges. Still, there is a problem with the manner in which the organisation builds the bridges. They seem to say 'you do it our way' and I think a lot of the communities are saying, 'We don't necessarily want to do it your way, because your way has been doing it wrong for the last two hundred years, so what makes you think that your way is going to be any better than our way?' That's my thinking, and I believe that a lot of Aboriginal people would feel the same way about it (ROI #10).

These comments demonstrate the ability of practitioners in government to take a critical view of the actions, planning, and decision-making processes of the State, and to argue that if the variety of recent government initiatives are to gain the respect of Aboriginal and Torres Strait Islander practitioners and their communities, then they must also be supported in practice. Commitments to Indigenous environmental health must not be permitted to exist as empty rhetoric in the corporate planning documents of government. Rather real measures must be put in place to bring immediate improvements in community and to the work environments of its practitioners.

Social Differences and Power Relations

The socio-economic disparity between Indigenous practitioners and the rest of the professional environmental health profession permeated the entire work related data set. Relations of power are inextricably linked to the status of Indigenous practitioners entering mainstream environmental health practice. Until recently, this professional field had almost exclusively been housed in the traditional government sectors. Membership eligibility was strictly controlled and legislative powers strongly guarded. Together, these attributes of environmental health professional practice helped perpetuate long-established approaches to working with Indigenous communities that failed to effectively bring about sustained improvement.

The research data suggests that environmental health practitioners in positions of influence today need to take a pro-active role in Indigenous environmental health matters. Further they must inculcate the same sense of collaboration and learning in their junior staff. Indigenous practitioners have looked to senior staff not only to accept responsibility for Indigenous environmental health development, but also to work with them in setting the pathway for the future. In just over half a decade, significant effort has been put into redressing the historical disparity between Indigenous and non-Indigenous community environmental health standards (see Tables 3 and 4). Amongst these advances are new pathways for Indigenous environmental health practitioners to channel issues into the formal structures and processes of government and the profession. Despite this, the research threw up many instances where social differences between Indigenous and non-Indigenous practitioners had been perpetuated within local workplace settings. One very simple example related to the location of Indigenous practitioners in the offices of some government agencies. In the great majority of cases, Indigenous environmental health practitioners worked side by side with their non-Indigenous colleagues. Through this arrangement they attended to Indigenous community matters at the same time as receiving good exposure to the full range of environmental health matters affecting the wider population. In these circumstances, Indigenous practitioners felt confident about enlisting professional support when needed. They also reported appreciating the direct influence this arrangement gave them over the day to day thinking and activities of the non-Indigenous professional

colleagues. In a few instances however, Indigenous recruits were physically separated from the rest of the environmental health team. Usually they were positioned with other Aboriginal and Torres Strait Islander health staff in a separate work area. Because of this professional separation, Indigenous environmental health practitioners experienced more direct contact with Indigenous peers from other health sectors than they did with their non-Indigenous professional colleagues. In defending this arrangement, one supervisor and office manager stated:

So yes, we could locate [our Indigenous practitioner] in with the other EHO's, but at the same time, I think he is going to miss out on the benefits of working with an Indigenous colleague... The way that we have got [his] position and the way that we cooperate with [him] in our day to day activities and our planning it really wouldn't matter if [he] sat here or if [he] sat on the foot path outside. The physical location is not an issue. I don't sit with my crew (ROI #24).

In his capacity of department manager this supervising officer was also located away from the environmental health professional staff. He felt comfortable performing his professional duties and meeting his management responsibilities under that arrangement. The other three or four qualified environmental health officers employed in that office were stationed in an open work area designed to encourage communication and team work amongst staff. Similar cluster arrangements applied in the office for other professional groups, such as the health promotion staff and the community nurses. The Indigenous practitioner in that office, and one other at a different office who also sat away from his environmental health colleagues, indicated their acceptance of this arrangement. While they felt comfortable enough working alongside an Indigenous peer, they both believed that the arrangement did not help to strengthen their environmental health professional experience, and that the separation from non-Indigenous colleagues resulted in lost opportunities for mutual learning. Indigenous practitioners considered learning about mainstream environmental health work as important as doing their job well in community. They saw collaborating with their non-Indigenous colleagues as a means of deepening their workmates' understandings of their communities' needs, and of how the mainstream and dominant systems of governance had so inadequately served those needs in the past.

One of these students had previously enjoyed working in an office environment in which Indigenous and non-Indigenous environmental health staff all shared the one open work area. He compared that with the professional isolation he experienced at his latest workplace:

I wouldn't say I have had a lot of experience working with the EHO's [here], just a bit of experience working with them...The EHO's here tend to do food complaints, drugs and poisons, water sampling. One reason I am starting to get impatient is because when I came here I expected to be doing more work across the board. Like when I was up north we were doing heaps of stuff together...[and] working less separately to the EHO's was a lot better. I think that [those EHO's] had more experience working in Indigenous communities... That time...I was learning heaps and I had the impression that when I came down here I'd be up-grading in a similar way (ROI #16).

Separating Indigenous practice from mainstream environmental health practice had implications for the way Aboriginal and Torres Strait Islander practitioners developed in their work roles and for how they progressed in their academic program. It impacted on the way Indigenous practitioners took their place in the professional workforce and how effectively they worked within the well-established and dominant systems of the profession and of government. Supervisors, directors and professional colleagues in government will have to relinquish traditional mechanisms of power and control if they are sincere about supporting Indigenous practitioner initiatives.

At a very local level, there were also examples of supportive approaches to Indigenous practitioner development taking place. However, there were also examples in the data that highlighted the resistance of mainstream professionals to hand over control to Indigenous practitioners. Two very public examples can be extracted from my field notes. They describe my observations at the 1998 and 1999 National Indigenous Environmental Health Workshops in Cairns and Broome respectively. The former was the first Commonwealth sponsored workshop. It attracted overwhelming interest from the non-Indigenous environmental health profession and from senior government bureaucrats. Whilst this 'high level' interest helped to justify the special attention Indigenous environmental health had at last received, paradoxically it did little to directly support the work of community-based practitioners on the ground. Their numbers at the workshop were relatively low. Two to three Indigenous practitioners

attended from each of the States and territories. There was also good representation of community practitioners from far north Queensland and the Torres Strait Islands, given their relative proximity to the venue. However, in amongst a total of approximately 120 participants, Indigenous practitioner numbers were low. Aboriginal and Torres Strait Islander practitioners were inadvertently silenced because of the dominant attendance and contribution of non-Indigenous professionals. Despite the good intentions of its organisers the workshop process quickly alienated most if not all of the practitioners it was intended to support. This alienation was evidenced on the first day by the clustering of Indigenous practitioners toward the rear of the workshop room. This was followed over the next two days by a steady but rapid departure from the venue of all but a few Aboriginal and Torres Strait Islander participants.

Indigenous practitioners and other concerned stakeholders made their concerns clear to workshop organisers. Workshop preparations for the following year's event aimed to give a much stronger voice to its Indigenous practitioners. A two-day conference, organised and attended by Indigenous environmental health practitioners only, preceded a two-day follow up workshop open to a wider audience. During the conference, Aboriginal and Torres Strait Islander environmental health practitioners identified a range of issues that needed addressing. Their concerns centred broadly around the topics of:

- Training needs
- Creating appropriate career paths
- Gaining support within community and in government
- Having Indigenous representation at government decision making levels
- Creating community partnerships and working with government

Workshop participants formed groups around each of the topics. Groups were mandated to explore how the recommendations that came out of the preceding conference could be acted upon in the workplace and supported through programs, policies and funding at the State and national levels. At the outset however, a health unit director was observed to ask the group he was facilitating whether they supported the recommendations. Group members reminded him that it was not their role to agree or disagree with the recommendations, but to look for ways to support them. The

director returned to the same question three times. Each time a different group member took him to task. His attempts to derail the process resulted in a heated dispute. He attempted to bog the process down in a debate over the validity of the conference findings, while the larger working group repeatedly challenged him to stay honest to the objectives of the exercise. Group process broke down and no useful suggestions were salvaged from discussions. Indigenous practitioners in that group were quick to identify a potentially insincere, tokenistic and ineffectual process of consultation. In describing a similar experience with consultation, one student said this:

From experience I've found...token gestures and...acknowledgments of certain things still doesn't mean it happens... You usually find people or organisations who are supposed to facilitate something are not clear on what facilitating is... They end up running it or dictating to you how it should be run... (ROI #6).

The above observation illustrated one difficulty faced by Indigenous practitioners in getting their issues and needs heard across all levels of government. On the one hand they were given the power to set the workshop agenda and to call key players together to identify mechanisms of support. But on the other hand, the workshop outcomes were reduced because of one or two powerful players who resisted their requests and undermined the initiative. It demonstrated clearly the existence of a power struggle between the emerging and still very dependent Indigenous environmental health workforce and some very influential power brokers in government.

Power relations and politics were features of the entire workforce development program. Indigenous practitioners very quickly identified aspects of their workplace training program that had been influenced by political agendas. One student for example clearly identified the political aspirations of a senior staff member as having a major influence over her work. As the student pointed out:

A lot our work is influenced by politics. Even here, like we can't say certain things at certain times because there's an election coming up. Just really stupid things, like because [of the political aspirations of a senior executive], if anything comes up, it's 'oh, have we got an announcement for that?' It's just really political (ROI #5).

In Aboriginal environmental health programs, students recognised instances where political manoeuvring and point scoring directly impacted on their work in communities. One student gave the following example:

I think the [Aboriginal] housing...program we're running...is politically based and I can see the politics getting in the way of things. It's already happened that some communities have been really fast-tracked and sort of leap-frogging other communities that were started earlier, just purely for a political agenda. That sort of scares me. I don't want to be a slave to some minister who needs desperately to look good and having that dictate the funding and the ability to do your job (ROI #4).

To some extent, these two comments represented common experiences for all government employees. Professionals in every level of government at some time or other have felt varying degrees of political influence over their work. Such pressures are an inherent part of professional practice in government. But students in this study also gave accounts of being placed at the centre of the political discussion. Being part of a State-wide training program for example brought with it some unwarranted special attention. This level of attention was unsettling to students who had recently entered the field and whose first priorities were to gain professional experience and pass their university studies:

...I think how the position is set up and how it is termed Aboriginal traineeship, it gets thrown about a lot. I don't know, like every meeting [my supervisor] comes back from, he said 'your position was mentioned again and I had to say you were doing this and this and this'. This area really plays on it at their big corporate meetings for some reason (ROI #12).

As was explained earlier, those students felt a responsibility to many bosses. They answered to their immediate professional supervisors and workplace directors, to their State program manager who monitored academic and professional progress centrally, and to program staff at the university who were interested in their academic performance and the issues of Indigenous environmental health practitioners at a national program level. Each had a claim, a situation that at times led to competing and conflicting demands on the student group. One student explained how he sensed being caught in the middle of a power play from the time he commenced his training program.

When it all first started we had a meeting, and they launched the program at the University and Herron was there and... I remember that [the Department staff] made it real clear that we were...[Health Department] trainees and not UWS trainees so I thought, you know, there's some sort of friction in what we can and can't do...(ROI #3).

Relations of power between the students, their immediate and central employer, and the university contributed to practitioner disjuncture in the professional training program. Indigenous students were acutely aware of the interests of each stakeholder and generally tried to separate them where possible. The most immediate concern for the students in the middle was to perform in their academic program and gain a solid professional practice experience with as little aggravation as possible. This point was made abundantly clear in the following excerpt from a student interview.

We know that there's something in it for [both the Department *and* the University] but we also see it as there's something in it for us too. It's an opportunity that's too good to let either of them worry us too much (ROI #5).

In all aspects of Indigenous environmental health practice and across every level of government, similar tales of power and control can be told. These findings suggest that Indigenous practitioners require the skills to act purposefully in a complex and often contested context of professional practice. They also require a response from the workplace and the profession. Here, advancements in Indigenous environmental health cannot take place in isolation or without reference to the broader debate on Aboriginal reconciliation and self-determination. In placing workplace professional learning at the heart of this discussion, students and organisations will need to 'read out, understand and politicise new forms of power and governance' (Butler, 1999, p. 145) that impact on the cultural identity and professional development of its newest set of practitioners.

5.4 Conclusion

This chapter has explored the workplace context of Indigenous environmental health practitioners in detail. It has identified a range of factors that combine to impact on the success of Indigenous practitioners in their work. In summary, this review of the experiences of workplace professional training has revealed the following:

1. Indigenous practitioners valued being a part of a workforce development movement but believed many features of their professional training to be poorly conceived and badly managed, raising questions about the motives of those involved.
2. Indigenous practitioners saw benefit for themselves, and their communities, in pursuing the training, but struggled at times to reconcile 'white fella' training and practice with their cultural norms and obligations.
3. Indigenous practitioners wanted to act as brokers of information across cultures but were cautious of employers' attempts to use their relationships with communities in ways that were insincere or risked compromising their own cultural identity.
4. The rhetoric of working in partnership with Aboriginal and Torres Strait Islander communities was strong among many employing agencies. However, Indigenous practitioners questioned the reality of this rhetoric
5. Indigenous practitioners working in mainstream environmental health agencies are constantly exposed to relations of power that both inhibit and help their programs in Indigenous communities environmental health.

The skills and knowledge-base of Indigenous practitioners, the support they receive from their communities and employers, and the resources available to them each influence their ability to work effectively in government and in community. Investing in, and continuing to support the development of an Indigenous environmental health workforce is both a vital and logical step if Aboriginal and Torres Strait Islander people of this country are to be empowered and take greater control over their lives. Recent initiatives in education and training, research and development, and program planning and funding have each represented positive shifts in government policy levels. At the same time these advances must be seen as only the first small steps in the long-term development of Indigenous environmental health and its fledgling workforce. For this work to take greater affect in the future, every environmental health practitioner must begin to engage with Indigenous environmental health issues and the Indigenous workforce on the ground.

But as this chapter has highlighted, there are environmental health practitioners who do not fully understand these initiatives, nor what their role in advancing these improvements may be. The resistance of some practitioners to this development can be

a result of an array of complex social and historical factors, some of which will be discussed in more detail in the following chapter.

CHAPTER SIX – THE DOUBLE BIND AND THE DOUBLE BURDEN

6.1 Introduction

Aboriginal and Torres Strait Islander environmental health students are caught in a double bind and carry a double burden. Students are asked to take part in a strong professional acculturation program without losing their own cultural ties. They are asked to accept and at the same time question and interpret their academic program for its suitability to their own culture. Resolving this double bind leads to a double burden. They must satisfy the curriculum demands of a degree that requires them to learn to deliver mainstream services in mainstream mode, while working to understand and improve the environmental health conditions of their communities where those same mainstream services have failed. Students are required to fulfil the formal functions of an environmental health officer in mainstream public health systems *and* find a way to translate concepts and practices of environment and health risk management into their own communities' customs and understandings. This is a dilemma seldom reflected in the curriculum.

The double bind and the double burden is a result of the merging of various histories. There is the history of the University of Western Sydney environmental health degree and its core problem-based curriculum; the history of the environmental health profession in Australia; the history of environmental health practice in and for Aboriginal and Torres Strait Islander communities; and the histories of each of the Aboriginal and Torres Strait Islander participants of the degree program, themselves located in the context of Indigenous Australian history. Examples of current impacts of these converging histories run through Chapters Four and Five. These examples can be better understood when placed within contemporary theoretical arguments about adult and cross-cultural learning and about relations of power. Viewed as two distinct but

interrelated sites where cross-cultural relationships and issues of power are played out, the University core curriculum and the professional practice and workplace environment of Indigenous practitioners provide important learning for mainstream educators and professional placement providers targeting Indigenous participants.

In this chapter I explore the theoretical assumptions behind problem-based learning as it now stands amid a variety of other mainstream and liberal approaches to adult education. This involves an overview of the theory and limitations of constructivism and an assessment of the ability of problem-based learning to meet the more pressing education and training needs of community-committed Indigenous practitioners. This work leads on to a discussion of three alternative ways of orienting problem-based learning, each linked to a separate view of knowledge and driven by a different educational purpose. The theoretical work of Max Weber (1964) on power and Michel Foucault (1979, 1994) on power relations is then drawn upon in order to illuminate the accounts of learner experiences of practice and workplace relations. The combined set of material helps to explain why the dominant form of learning applied in problem-based learning courses – that of interpretive learning – was not necessarily the most effective, nor most appropriate for this group of students working in highly contextual and power laden work settings, particularly when practice-based alternatives are available.

6.2 Adult and Problem-Based Learning Theory

Constructivism and adult learning

The notion of constructivism and its historical association with problem-based learning can help us understand the impact of the learning environment on the learning of Indigenous students is. According to Fosnot (1996, p. ix) constructivism is a theory of knowledge and meaning which views knowledge as temporary, developmental, non-objective, internally constructed, and socially and culturally mediated. In essence, constructivism is concerned with how people understand, construe, or make sense of their world and ‘the perplexing variety and constantly changing texture of their experience’ (Candy, 1991, p. 255). This view of knowledge falls within the interpretive

paradigm (see Chapter Three). As such, constructivism offers an alternative way of looking at knowledge, knowledge acquisition and the process of cognition from that of the traditional positivist or empiricist paradigm (Gergen, 1995, p. 27).

The founding work on constructivism, as a philosophy of learning, can be traced back to the work of George Berkeley (1710) and then the Neapolitan philosopher Giambattista Vico in the eighteenth century (Candy, 1991, p. 253). Vico held that humans only clearly understand what they have themselves constructed. Jean Piaget and John Dewey were two twentieth century educationalists who developed theories of constructivism through their studies of childhood development (see von Glasersfeld, 1996). For Dewey, knowledge and ideas emerged only when learners experienced situations that had meaning and importance to them (Dewey, 1966, p. 22). These situations had to occur in a social context, such as a classroom, where students joined in manipulating materials and thus, created a community of learners who built their knowledge together.

Piaget's constructivism is based on his theory of the psychological development of children. Piaget called for teachers to understand the steps in the development of the child's mind. The fundamental basis of learning, he believed, was discovery:

...to understand is to discover, or reconstruct by rediscovery, and such conditions must be complied with if in the future individuals are to be formed who are capable of production and creativity and not simply repetition (Piaget, 1973, p. 20).

According to Piaget, in order for children to reach an understanding of basic phenomena, they must go through ten stages of learning. Importantly, this maturation process involves accepting ideas they may later see as not truthful. In autonomous activity, children must discover relationships and ideas in classroom situations that involve activities of interest to them. Understanding is built up step by step through active involvement.

The extent to which educators and psychologists are now labelled 'cognitive constructivists' or 'social constructivists' depends on whether the social or the cognitive is privileged in any analysis of learning. In both accounts constructivism perceives

learning as an active process in which learners use their past and present knowledge to construct new ideas or concepts. The former is typically applied in modern adult education programs and emphasises the mental processes of the *individuals* and the way in which they construct knowledge of the world from within (Gergen, 1995, p. 28). The latter constructivist approach focuses on the *group* conversation (Richards, 1995, p. 59). In both cases, knowledge is *constructed* through cognitive activity that is constantly interacting with, and being influenced by, the learners' social environment.

...a constructivist view of learning suggests an approach to teaching that gives learners the opportunity for concrete, contextually meaningful experience through which they can search for patterns, raise their own questions and construct their own models, concepts and strategies. The classroom in this model is seen as a minisociety, a community of learners engaged in activity, discourse and reflection. The traditional hierarchy of teacher as the autocratic knower and learner as the unknowing, controlled subject studying to learn what the teacher knows begins to dissipate as teachers assume more of a facilitator's role and learners take on more ownership of the ideas. Indeed, autonomy, mutual reciprocity of social relations, and empowerment become the goals (Fosnot, 1996, p. ix).

Whilst claiming that constructivism is not actually a theory of teaching, Fosnot (1996, p. ix) stresses that it does support methods of instruction that are quite different to traditional teaching approaches. Problem-based learning then is one example of a constructivist teaching approach.

Constructivism and problem-based learning

The course founder of the environmental health program at University of Western Sydney used constructivist ideas of teaching when he established the original curriculum. At that time he intuitively played with Piaget's notion of discovery:

Discovery learning was a key phrase. I wanted students to actually discover stuff. I wanted them to have the excitement of working something out for themselves, not having to be told. I wasn't going to tell them anything I reckoned they could work out for themselves (ROI #26).

Outside University of Western Sydney, constructivism is readily identified as the theoretical basis of problem-based learning (see Russell *et al.*, 1995; Ryan, 1997a and 1997b; and Kang, 1997 for example). Some authors do not go much beyond the point of simply identifying this theoretical association. Kang (1997), however, discusses

three instructional principles stemming from a constructivist view of knowledge that are crucial to the teaching of courses in a problem-based learning format. They include learning by experience, learning by collaboration, and learning by authentic task (Kang, 1997, p. 207). In each of these principles, partial explanations can be found for the difficulties experienced by Indigenous students in the University of Western Sydney environmental health curriculum.

Learning by experience

Problem-based learning emphasises the constructivist concept that learners are proactive and seekers of autonomous participation in problem solving. It accepts that each learner brings different historical, social and cultural experiences to bear on understanding the dimensions of problem. As Kang (1997) asserts, no matter how structured or defined the information disseminated to learners may be, students will each absorb, perceive and respond to selective portions of information in ways which fit with their prior knowledge structure, or in ways which make the information meaningful and relevant to their experience (p. 207). Likewise Indigenous participants of this study bring their individual histories to bear on the problem-based learning situations. But they also bring to their learning a shared social history of disadvantage and struggle against the dominant and oppressive Australian State. The more socially committed individuals of the Indigenous cohort are interested in educational approaches and outcomes that locate learning for the group (and their wider Indigenous populations) within the context of this collective struggle, a feature of learning amongst some Aboriginal and Torres Strait Islander students that has been identified many times over (see Foley and Flowers, 1992; Byrnes, 1993; and Barnes, 2000).

Mainstream problem-based learning (and traditional constructivist approaches to adult education) on the other hand, orients learning toward the development of individuals, and their ability to work effectively within mainstream groups.

...draw[ing] on the discipline of psychology... 'inspirational humanistic psychology' has resulted in a form of experiential adult education which concentrates on the individual. The words 'self' (as in self-awareness or self-actualisation), 'own' (as in developing one's own potential) and 'personal' (as in personal growth) in the discourse of experiential adult education emphasise this concern; and although this form of education may

make use of a range of group processes...the aim is almost always to help each person in the group 'develop' as an individual. Indeed, the group has no reason for existence outside the specific learning activity, and once the activity is over the group disbands (Newman, 1999, p. 41).

A social constructivist version of problem-based learning on the other hand would be interested in developing a group conversation around the problem and in generating outcomes that yield a collective benefit to the wider marginalised group.

Learning by collaboration

Because constructivism contains a notion that knowledge is both a cognitive *and* socially-mediated construction, Kang (1997) argues that each student participating in a group problem-based activity becomes a 'member' of a learning society. Acculturation to that society, she points out, indicates the 'acquisition of linguistic codes, habits, terminology, norms, way of thinking and behaviour' shared in the group (p. 207), thus making a collaborative learning environment supportive of team inquiry, problem-solving and action. I argue that such an acculturation is more readily achievable when all collaborators already share a common social culture and that acculturation of others into the dominant culture occurs less easily. The data demonstrates how difficult it is for Indigenous students to take up the codes, habits and ways of thinking that have been generated for and by the privileged in society, when their thoughts and actions have for so long been governed by a different and/or opposed set of codes, norms and ways of thinking.

Ryan (1997a) also explores the concept of collaboration through his discussion on the principle of 'multiplicity'. Multiplicity he states:

...emphasises the importance of dialogue with other individuals through collaborative learning, and is reflected in the focus on small group learning...in so many applications of PBL (Ryan, 1997a, p. 128).

Ryan's portrayal of the principle of multiplicity accentuates the importance of the construction of knowledge of concepts, achieved through multiple and varied applications of the concept. Here he celebrates diversity in group-member thinking and the belief that collaboration capitalises on learning as group members negotiate and reconcile their varied knowledges. However he provides no evidence of the

effectiveness of this collaboration across cultural and social divides. With the benefit of the research data it is possible to envisage a lively classroom negotiation leading to reconciliation of views occurring amongst a small group of white, middle-class, young adult learners. However without a critical mass and an empathic audience, it is less easy to picture a reconciling of views where asymmetrical relations of power exist between the dominant and the marginalised within the group.

Learning by authentic task

Ryan (1997a, p. 130) also included the notion of authenticity in his set of instructional principles, stressing the need for ‘anchored instruction’ that situates action in meaningful problem-solving contexts. This principle is directly opposed to instructional approaches in traditional education practice where tasks or problems are selected, pre-specified and pre-sequenced and presented by teachers with varying capacity to capture learner’s interests (Kang, 1997, p. 207).

In the context of the environmental health degree at University of Western Sydney, issue-based problems, fieldwork, scenarios and professionally relevant case studies make up most of the problem-based learning activities for full-time students. These attempts at simulating the real world tend to eliminate the extraneous factors of the problem and tend to ignore important features of professional work that practitioners must be able to deal with upon course completion (Boud, 1997, p. 7). This research has highlighted the difficulties that exist in replicating the full extent of this learning experience for distance education students. Because they are also practitioners, distance education students would appear to have little need for hypothetical real-world learning experiences to be generated on their behalf. Their every day practice already provides a smorgesboard of possible authentic experiences upon which they could base their learning. The strong message coming through the data in this research is that Indigenous students relate poorly to the sorts of problems that have been assigned to them in their core subjects. Their own workplace issues are viewed as far more important and appropriate to their study program.

Student-centred and life-long learning

In addition to the above principles of 'experience' 'multiplicity' and 'authenticity', Ryan (1997a, p. 128-31) sees the following principles applying to problem-based learning courses and curriculum:-

- activeness - in which there is a dynamic engagement with the task, whether learners are working individually or collaboratively with others.
- articulation - whereby learners explain their newly acquired knowledge to fellow learners, tutors and others in ways which foster understanding by their audience.
- termlessness – whereby learners have regard for lifelong commitment to advancing their knowledge and take comfort in the fact that understanding of complex material is never completed, but enriched as students construct personal meaning and develop mature thought processes.

Advocates of constructivist approaches to teaching like problem-based learning value the handing over of responsibility for learning to the learner. They resist strongly traditional 'banking' models of education, believing instead in every student's:

...innate and powerful drive to relate to others and...continuing attempt to make sense of their experiences (Ryle, 1975, p. 1 quoted in Candy 1991, p. 258).

Constructivist educators see problem-based learning offering a way round the many shortcomings of the instructional teaching techniques that are based on behaviorist models. As the course founder of the environmental health program explained it:

I had been profoundly disappointed and disillusioned with every kind of education that I had ever experienced as either a learner or a teacher before this. I used to think examinations were anti-educational; they distracted students, students would work for marks and not for knowledge. I was very dissatisfied with formal examinations from very early on in my teaching career. I would describe them as an 'artifact' because they didn't test for the things that were important (ROI # 26).

He, along with his teaching colleagues, viewed his role more as an agent or facilitator of learning, than as teacher.

The content in the [core curriculum] was in always fed in laterally. We made it available in a timely way. You never actually told them the answer.

So, our way of guiding them was through questions and propositions. They were grounded questions, they were hooked into what you did last week, and they were provocative in the sense that they were coming to a way through via the group and through small group teaching (ROI # 26).

This kind of approach to teaching is core to the constructivist notion that teachers are charged with the duty of developing self-actualised, self-directed, life-long learners for the betterment of society in general. But some (see Sullivan, 1984 for example) call into question the ability of problem-based learning, along with other constructivist and interpretive approaches to teaching, to meet the high educational and societal goals it sets itself.

There is no disputing here the capability of problem-based learning to produce some useful professional skills in graduates. Indeed this research demonstrates that Indigenous students who complete the constructivist core curriculum of the University of Western Sydney environmental health program take with them the same sort of skills as their non-Indigenous counterparts. Aboriginal and Torres Strait Islander students in problem-based programs *do* learn by experience. They *do* actively collaborate in dealing with the problem under investigation. They *can* satisfactorily articulate their findings and *do* demonstrate an appreciation for lifelong learning. In this respect, the research findings here reinforce elements of McCall's (1998) research who found that Indigenous Australian students in a problem-based medical education course could satisfy the demands of that type of teaching, *albeit* having to contend with an array educational, personal, cultural and structural barriers. Further, this research supports elements of Thurecht and Vose's (1997) research who found problem-based learning to develop in Indigenous students some professional skills useful to their working lives.

However this current research extends on these previous findings to shed light on the shortcomings of problem-based learning for community-centred and practice-based learners. This research highlights how the theoretical and conceptual shortcomings inherent in a constructivist view of knowledge emerge as acutely important to educators delivering programs to the culturally marginalised or socially disadvantaged in modern society. In essence, this research has demonstrated that constructivist approaches tend to underplay, or neglect completely, an analysis of power, history and social theory (Layder, 1993, p. 6). In terms of the environmental health degree at University of

Western Sydney these limitations must be acknowledged and changes put in place to address them.

6.3 Problem-Based Learning in Practice

The delivery and effectiveness of problem-based learning courses can be influenced by the sorts of theoretical shortcomings of constructivist approaches to education discussed above, as well as a range of structural, conceptual and practical limitations. The latter may include: varied teacher conceptions of learning and problem-based learning; complex institutional, economic and professional accreditation influences; and the likelihood of teacher actions (their 'theory-in-use') not according with their 'espoused theory' (see Argyris and Schön, 1980).

With the spawning of educational strategies under the banner of problem-based learning has come a range of theoretical conceptualisations and pedagogical approaches. Three broad approaches to problem-based learning can be conceptualised. Understanding where the distinctions lie between these approaches helps us to position the long-held ideologies and practices of staff in the University of Western Sydney environmental health program. Further it sets the challenge for a review of curriculum and problem-based pedagogy in a broader theoretical context.

Three Models: Instrumental, Interpretive and Critical

Problem-based learning pedagogy has typically been confined to teaching approaches that are constructivist and interpretivist. But in the adult learning literature examples can also be found of highly structured approaches to problem-based courses or curricula that, for example, focus heavily on student exposure to problem-assessment processes, but do less to develop contextualised problem-solving skills or foster self-direction and learner motivation. Additionally there are examples of problem-based pedagogies that adopt critical approaches to problem analysis and learning in general. These latter approaches seek to locate and document the taken-for-granted interests and strategies of government, industry and large organisations which 'often masks particular interests inimical to human emancipation' (Collins, 1991, p. 104).

Social purpose in education is a key factor in distinguishing between each of the approaches to problem-based learning. Jürgen Habermas identified three ways of constructing knowledge and suggested that each derived from a different human interest (Foley, 1995b, p. 17). These ways of knowing are reflected in a variety of terms across the educational and social theory literature but I refer to them here as *instrumental*, *interpretive* and *critical*. Kemmis, Cole and Suggett (1983) and then Carr and Kemmis (1986) used these categories to illustrate the different ways knowledge is viewed in school education and in the application of educational research. I follow with a similar analysis of the theory and practice of problem-based learning, with particular reference to the inter-cultural exchange when students in a mainstream course come from the Indigenous section of the population.

Instrumental Problem-Based Learning

Kemmis *et al.*, (1983, p. 11) suggest that an instrumentalist view of education in general would imply that knowledge is objective, a public matter and mostly described as skills and information which have their meaning in occupational and disciplinary contexts. Cowdroy (1995, p. 48) helps to explain this in the context of problem-based learning by identifying that many problem-based learning programs in fact operate within a ‘solution-based learning’ framework. In this educational approach, he claims, students are presented with particular problems in order that they learn a known process that leads to a known outcome. One medical program applying an *instructional method* to problem-based learning characterised courses:

...by the use of patient problems as a context for students to learn problem-solving skills and acquire knowledge about the basic and clinical sciences (Albanese and Mitchell, 1993, p. 53).

Here the problem is turned into the object of study, with a solution becoming the focus. In so doing only a very limited range of solutions to generic problems can be applied (Cowdroy, 1995, p. 47). Instrumental problem-based learning then concentrates more on the ‘acquisition of facts, procedures, and so on that can be retained and/or utilized in practice’ (Candy, 1991, p. 250). It gives less attention to developing learner

perspectives on life-long learning and is unlikely to take up critiques of social norms or explore entrenched barriers to cultural or organisational change (see Table 5).

Schön's concern for instrumental approaches to problem solving is that they do not reflect the real world practice of most professions. Problems that lie outside of academia are not presented as givens, rather practitioners must construct them for themselves from the 'materials of problematic situations which are puzzling, troubling and uncertain' (Schön, 1983, p. 40). It is reasonable to ask whether for the first students from an Indigenous background there would be both more frequent and more intense situations of this kind in their working lives.

The core environmental health curriculum at the University of Western Sydney did not demonstrate features of an instrumental approach to problem-based learning. Nonetheless, instrumentalist elements to problem-solving may have influenced the approach some staff took to the teaching of core subjects. Each member certainly brought a different approach to core subject teaching and held varying views on the way subjects should be run. These variations may have impacted on for example, the amount of guidance students received from different subject facilitators; the extent to which students took part in the assessment of their peers; or the amount and kind of reflection staff encouraged learners to engage in and report on.

Interpretive Problem-Based Learning

As educational programs shift from those favouring individual knowledge for technical or intellectual control, to programs aimed at developing the individual learner and preparing her or him for life and/or work, they move into the interpretive domain. This approach suitably describes the orientation of core subjects under consideration here. Foley (1995b, p. 17) states that the fundamental assumption of the interpretive paradigm is that different individuals understand the world differently, therefore knowledge is seen as both subjective and socially constructed. Knowledge in this sense, according to Kemmis *et al.* (1983, p. 11), can mostly be described as 'learnings, attitudes and living skills which have meaning and significance in the individual's life context and culture'. In an interpretive approach to learning, the emphasis is on how individuals make sense of situations and how meaning can be negotiated and reconciled. As was pointed out

earlier in this chapter, constructivism provides the theoretical foundation for teaching interpretive problem-based learning courses.

PBL Model	CRITICAL		
Element of PBL			
Aim	Workforce development	Individual and social change	Social critique and cultural change
Problem Construction	Artificial problems in a course context	Individual interpretation of real-life problems	Cultural interpretation of 'messy' real-life problems
Content	Facts, known solutions	Understanding, context-based solutions	Exposing and evaluative, range of options
Teaching Style	Direction	Guidance	Challenge
Issues For Indigenous Professional Practice	May be irrelevant to professional practice	Leaves individual with all the responsibility to adapt to practice	Attention to cultural issues, by-passing students field of practice

Table 5: Three models of problem-based learning illustrated by this study

For Indigenous students in an interpretive problem-based learning course, two important points need to be made. First, the structure of knowledge in the curriculum of most interpretive problem-based learning programs is informed by the work of cognitive psychologists like Piaget. The point of the teaching and learning is to develop students' capacity to identify and act on real world problems encountered in their field of practice. The curriculum of an interpretivist approach to problem-based learning has a strong emphasis on how different stakeholders make sense of the different situations encountered. Such teaching programs take their strength from the special attention they give to the needs and immediate problems of students within specific professional and social contexts. In interpretive approaches to problem based learning, the originating problem, issue or encounter may be such that:

...multiple acceptable paths and multiple solutions are expected, and the learning process continues until multiple alternative solutions and a 'best fit' have been identified (Cowdroy, 1995, p. 47).

Much broader methodological frameworks typically apply to problem investigation and analysis in the interpretive models (see Table 5). In the case of the environmental health degree at University of Western Sydney, these broader frameworks have included the *Environmental Health Methodology* (Ireland and Powis, 1988); the *Design Your World* approach to problem-solving (Stephenson, 1994), and a range of other tools and frameworks for managing change (Brown, 1997).

The second point is that interpretive approaches to problem-based learning are strongly influenced by humanistic ideas. Such theoretical underpinnings are rooted firmly in the work of humanist psychologists like Carl Rogers and Malcolm Knowles and result in programs with a particular teacher/learner relationship. Such a relationship is typified by students being given greater learner autonomy and more responsibility for deciding what to learn. Programs with pedagogical processes of this nature encourage learners to develop their own interpretation and understanding of matters based on communication, deliberation and refinement of thought. By drawing mainly on personal experience and reflection of personal attitudes and feelings, students in problem-based programs of a more experiential nature are encouraged to view learning as a pathway to self-direction and self-fulfilment. As the original course designer attests, the seminal work of Knowles (1970) strongly influenced the environmental health curriculum from the outset:

Knowles had helped me understand the notion of letting people be learners and how if you take over and direct them, learning is lost. I knew I couldn't tell them what to do, but I also knew that I needed to guide them.

What I took from Knowles was some of his ideas about how you work with groups and how people learn in context (ROI #26).

Some writers argue that it is the relationship between the nature of an interpretive curriculum (which focuses on the way different people make meaning in real world situations) and the pedagogy of an interpretivist approach (which is strongly influenced by humanistic ideas) that limits the ability of such programs to pay adequate attention to issues of power. Newman (1999, p. 41-42) for example, claims that because most adult education theory, problem-based learning included, is informed by humanistic and

behaviourist psychology, it simply *cannot* emphasise the complex and power laden nature of the workplaces of those involved.

Other critical pedagogues and theorists share this view. Collins (1995) and Griffin (1983, 1987) for example, both trenchant critics of some self-directed models, highlight the disconnection of interpretive approaches to education from questions of power and control in society. McWilliam (1997, p. 219) accuses the mainstream versions of education based on cognitive science and humanistic psychology of abetting the values of competitive individualism in educational institutions. Like Griffin (1983, 1987), McWilliam holds educators who have been influenced by such approaches to adult education responsible for the depoliticising and decontextualising of important learning situations. These contributions build on the work of Habermas and contemporary critical theorists such as Collins (1995), Welton (1995) and Mezirow (1995) in stressing that it is the overemphasis in the interpretive framework on:

...the subjective dimension of knowing and learning, [which result in it paying] insufficient attention to the ways in which our understandings are shaped by the structure and culture of the institutions in which we live and work (Foley, 1995b, p. 18).

In a country where they are often denied access to their own local traditions and governance, students with an Indigenous interest are clearly more at risk of having their cultural frameworks ignored than mainstream students.

Critical Problem-Based Learning

In arguing that interpretive orientations do not go far enough to addressing the social and ethical issues of learning, critical theorists advocate pedagogies which aim to expose knowledge as being constructed through social interaction and thus historically, culturally, politically and economically located. They insist on education always being a moral and political endeavour (McWilliam, 1997, p. 219) with meaning to be found in actions or projects whose significance is in specific historical, political and economic contexts (Kemmis *et al.*, 1983, p. 11). Critical pedagogy emerged as one response to the radical critique of education in the 1960's and 1970's (Foley, 1995a, p. 45) with Paulo Freire being widely acknowledged as a founding theorist and practitioner

following his initiation of a highly successful nation-wide educational program for Brazilian slum dwellers in the early 1960's (Wallerstein, 1983, p. 12).

In her book 'Language and Culture in Conflict', Wallerstein illustrates how a Freirian problem posing approach is applied to the teaching of English as a Second Language (ESL) in a United States class room. She draws on Freire's writings on his experience as an educator among the poor and disenfranchised in Brazil, and on his emphasis on consciousness raising, empowerment, and the politics of education (see Freire, 1970). Freire's approach was focal to Wallerstein's project because her teaching also centred around students' own experiences and their collective interpretation of these experiences. For Freire and other critical educators, education and problem-solving starts with the issues in peoples' lives and should be used as the conduit for the creation of a new social order.

To pick up on Freire's pedagogical approach in the Indigenous context would be to engage Aboriginal and Torres Strait Islander environmental health practitioners and students in dialogue about their lives and so gradually draw out and examine significant themes and issues. Freire claims that by learning in this way students develop a critical view of their lives and of the ways to act to bring about improvement to their quality of life (Freire, 1970, p. 64-65). A critical approach to problem-based learning aims at delivering quite different educational outcomes to those using instrumental and interpretive approaches (see Table 5). Firstly, it aims to assist learners to get at the causes and understand the dynamics of problems encountered in their work and/or in their lives. By placing teaching and learning firmly in the social context of where they live and work, critical education assists learners to 'collectively analyse power relationships and the social and economic structures that prevail' (Newman, 1995, p. 259). Secondly, as critical pedagogy is interested in learner transformation and emancipation, it is concerned with learners winning more freedom for themselves and gaining greater control over their lives.

The teacher's role in a critical problem-based learning approach is to both support and challenge students in critical analysis and discussion. An important pedagogical strategy is the employment of dialogic modes of teaching which put student's

experiences back to them in ways which encourage them to consider how they might act on and challenge their reality (Foley, 1995a, p. 46). Validity and effectiveness in this approach requires both:

- (a) a deep and sensitive understanding of students' cultural backgrounds and political choices, and
- (b) an openness to listen to and a willingness to be advised by students of unfamiliar cultures.

Problem-based learning in the environmental health program at University of Western Sydney was neither conceived nor delivered in this way. There was a focus in the program on developing critical analysis skills in a few core subjects, but on its own, this did not take the core curriculum into the critical pedagogy domain. Relations of power for example were poorly conceptualised in the environmental health curriculum, as they are in most other professional education programs firmly positioned within the interpretive domain.

Teacher Ideas and Practices

The various ideas and practices of teaching staff involved in the delivery of core curriculum was a major contributor to the experiences of Indigenous course participants. The history of teaching practice in the environmental health academic program can be viewed as an amalgam of beliefs and approaches to core subject delivery, passed on over a 21 year period. Staff focus group sessions, combined with individual staff interviews, resulted in three issues being identified as contributing to the perpetuation of a particular interpretive approach to teaching problem-based learning. These were:

1. Graduate recruitment
2. Coaching as the main form of staff induction
3. Practice driven by 'intuition' and 'trial and error'

Each can be linked to a limited understanding by staff of the theoretical underpinning of interpretive problem-based learning specifically, and of adult education more broadly.

Graduate recruitment

Over the past two decades a number of teaching staff had been recruited from the graduate pool. The transition from student to tutor of core problem-based learning subjects was experienced in a range of ways. One staff member recounted how he began facilitating problem-based learning classes without any form of on-the-job coaching, let alone any orientation to the theory of teaching and learning. His induction into the management of a problem-based subject consisted of a few words of advice at the beginning of the semester. It was assumed this staff member, having been a student of the system, understood both the theory and practice of teaching problem-based learning subjects.

It was a funny transition to get through all of these subjects as a student, and enjoy them immensely, to actually facilitate one for the first time. With a 'game plan' in front of me I had to think a lot more about: What processes are going on here? What am I supposed to be doing? How am I supposed to get the students to think and to challenge themselves? It led me to wonder how well prepared I was for this, how well I had analysed and understood the learning situation (Academic Staff Member, 1998).

Without a practical induction to facilitating problem-based subjects and a detailed exploration of the theoretical underpinnings of this approach, not all graduate-tutors received support. Their experience highlighted the lack of transparency for students in the problem-based learning process and a shortcoming at some stages of course delivery. Students are repeatedly advised that core subjects focus on problem-solving activities. Staff also repeatedly reminded students of the importance of 'the process of learning'. Yet this research revealed students believed staff were more interested in subject outcomes, such as the quality of the final reports and seminars, than their ability to explore the substantive issues or their ability to reflect critically on the learning experience. Students participating in this research identified a mismatch between what they were asked to do and what they were actually assessed on in order to satisfactorily complete core subjects.

Focus group sessions with teaching staff revealed each member approached this issue of transparency differently. Some believed they made the learning process explicit, forgoing emphasis on understanding the material for a greater appreciation and participation in reflective exercises.

Traditionally we've been really comfortable with the process of facilitation around the problem...more recently I have found the challenge to be in getting the students to reflect on their learning experience from a 'whole of self' point of view (Academic Staff Member, 1998).

Others tinkered around the edges:

...my experience with problem-based learning is as a student here as well. We were told what was happening was problem based learning ...[but]... I had serious problems with the approach taken. When I actually came on staff here I did a bit of searching – I didn't actually go looking in the literature but I did a little bit of thinking about what was wrong with the process I had been part of. I changed the way it was facilitated so I was more comfortable with the actual de-briefing and giving of feedback to the students.....So what I do [now] is really very iterative [and] quite different from my original experience of problem-based learning (Academic Staff Member, 1998).

This staff member also came through the graduate route. She found the transition difficult and told of her need to change the way problem-based learning was done to suit her ideas of what it should be. Making such changes in isolation and without any concerted check back to the literature explains how easy it was for a shared understanding of problem-based learning to be eroded. Moreover, it helps to understand why course participant's were confused by a core curriculum learning process, which they saw as being ambiguous and inconsistently applied.

Coaching and staff induction processes

Whether new staff came into the program from the graduate base or through other avenues, staff training at University of Western Sydney was problematic. The lack of updated documentation linking the educational theory to the environmental health program meant that coaching was the means by which new staff became familiar with the problem-based learning curriculum.

The emphasis on coaching as a staff induction process proved quite effective in carrying forward the approach to core subject delivery for over 20 years. New staff were guided by senior staff on how much freedom to give students, for example. There were also advised on the sorts of reactions to expect from students struggling with problems and

given tips on how to respond to these student concerns. This built teamwork amongst colleagues and reinforced a general perception among teaching staff that the approach to problem-based course delivery was the right one. Coaching provided a mechanism for ensuring a reasonable consistency in teaching practice. Furthermore it led to consensus on process and a strong shared understanding of what was important about the problem-based learning process. As one senior staff member put it:

There was strong consensus on what we were doing and what we believed. We were doing what we believed on a daily basis (Academic Staff Member, 1998).

However there were also flaws in the coaching process. With each teaching staff member bringing his or her own interpretation to the task of teaching core subjects, inconsistencies and misconceptions developed. The strongly coached tended to make few changes, while the new arrivals, left to their own devices, had the freedom to adjust the core subjects to their liking. Either way, being handed down a process and coached through the finer points of its delivery was problematic for all staff at some stage. One staff member remarked:

Having taught [problem-based learning subjects] for a while made me feel confident in the process but I guess I still think today that I was following someone else's recipe. Unless I went out and looked at how the bigger literature around problem-based learning fit into how we delivered the subjects then I guess I was more or less watering down somebody's recipe (Academic Staff Member, 1998).

Many of the environmental health academic group shared this view. Some felt that because they were not party to the initial program design and development, they could never really appreciate the theory behind the original model. With such a strong separation of theory from practice, coaching had only taken them a part of the way there. Resources for course teaching became scarcer over the years too. In addition founding members of the teaching staff were less engaged in the program, retiring or shifting their energies to other academic pursuits. Consequently, the time and effort given to coaching steadily reduced. In the first instance, the induction process could have been criticised for lacking any substantive theoretical input. As time went on it could be accused of neglecting the needs of new staff from much more than just a theoretical perspective.

Over the years I feel I have seen it watered down as different staff members have come and gone and resource pressures increase. When we get a new staff member we should have someone there who could indoctrinate or brainwash [the new person] because it did get watered down often and new people would come without necessarily having a full understanding of what we were trying to achieve (Technical Staff Member, 1998).

Despite its cynical overtones, the above statement draws attention to the importance of appropriate staff induction. It reinforces previous findings that one difficulty with problem-based learning has been the insufficient attention by faculty to 'staff induction and development, particularly for those staff who were not part of the original team which developed the programme' (Boud and Feletti, 1997, p. 5).

Intuition and trial and error

Wide and varied conceptualisations of problem-based learning existed among teaching staff of the environmental health program. These reflected the broad backgrounds and educational experiences brought to practice by each staff member. They also reflected the 'early days of the course when we were almost theory-free' (ROI # 26). 'Intuition' as a main driver for informing teaching practice grew, perhaps, out of these circumstances. As one staff member put it:-

All my formal learning has been propositional. But intuitively I think I know a fair bit about problem-based learning...and comparing what I learned from...rich experiential things versus what I was learning in the class room made me really question and reflect on the models that were being used in tertiary education. So quite intuitively I tried to incorporate the experiential into the way that I approach teaching (Academic Staff Member, 1998).

Intuition also played a major role in the way staff understood the benefits of teaching subjects using a problem-based format. One staff member, with a lengthy historical engagement in the program, stated:

I came here with a pretty prescriptive, rigid and scientific background and I found difficulty [with the problem-based teaching style] at first.... After a fairly short while I became a pretty enthusiastic convert to the [PBL] teaching style. It seemed to be just so much better to have students driving their own learning rather than having it shoved at them and being expected

to regurgitate facts. My gut feeling was that it was a really, really great way to teach students (Technical Staff Member, 1998).

For the program founder, this was the great strength of problem-based learning. He saw this kind of problem-solving process as dignifying:

As I have thought about this kind of education, dignity has been a part of it. Giving people a problem and then allowing them to own it and having had the satisfaction of working their way through it and coming out with an answer that can be validated, it is very dignifying. Much more so than having them sit through lectures, demanding that they memorise it and asking them obtuse questions about it in the exam, not dignifying (ROI # 26).

The 'gut feel' of staff over what was right and wrong in subject delivery also strongly influenced the way subjects were reviewed on a weekly and semester basis. Typically some sort of 'trial and error' approach was adopted in the reviews of subjects. Such an approach is not in itself problematic. After all most adult learning models are premised on reflection-in-action spirals of some sort (Kolb, 1984). Quite simplistically, a systematic evaluation of what had happened and how it could be improved upon for the next time is, in part, what it means to be a reflective practitioner (Schön, 1983; Boud, Keogh and Walker, 1985; and Brookfield, 1986). Carr and Kemmis (1986, p. 113) point out that:

...teachers could no more teach without reflecting upon (and hence, theorising about) what they are doing than theorists could produce theories without engaging in the sort of practice distinctive of their activity.

But in this instance, the authors are referring to trained teachers who at least possess some theory of education. Carr and Kemmis argue that through their training, teachers should have the necessary skills to engage in reflective practice. University lecturers, on the other hand, more often than not have little or no formal educational training. Tertiary education academics tend to rely heavily on a strong understanding of their content area and their professional expertise as well as some ideas of how this knowledge could best be transferred to the student body. For this reason university educators are renowned for their general lack of appreciation of pedagogical and andragogical theory and practice.

The university 'professional' has, until recent times, been seen as an expert within a discipline rather than an expert educator within a discipline. Consequently, teaching has not been seen as a rewarding focus for reflection and it is this, it may be argued that lies at the heart of the problem for tertiary education...(Gluck and Draisma, 1997, p. 10).

The type of reflection embodied in a trial and error approach to problem-based learning does not come close to what Carr and Kemmis viewed as suitable for professional teaching practice. Reflective learning at an individual and group level demands much more than a cursory look at what works well and what does not. The reflective practices of teaching staff have major implications for the way changes have been implemented in the environmental health program over the past two decades, and contribute in part, to the dilemmas for Indigenous practitioners entering this mainstream professional education program.

6.4 Power Relations Theory

What is it then about the concept of power that makes it so important in a curriculum for Indigenous learners in a mainstream professional education program? One response to this question comes out a definition of power that sees it as 'the possession of control or command over others; dominion; authority; ascendancy or influence' (Deldridge *et al.*, 1997, p. 1679). For Max Weber, this concept of power is at the heart of the subject of social stratification, of which class, status and party are three dimensions (Marshall, 1998, p. 519-521). Yet this Weberian notion of 'centralised power' can be interpreted as:

Power with a capital P, dominating and imposing its rationality upon the totality of the social body (Foucault, 1994, p. 128).

Power, in this sense is aligned to a more traditional understanding of juridical or political control which assumes that power is possessed; that it flows from a centralised source from top to bottom; and that it is primarily repressive in its exercise (Kelly, 1994). Examples of Weberian expressions of power are evident throughout the

accounts of Indigenous students experiences, both in the curriculum (Chapter Four) and in their practice (Chapter Five). They are further demonstrated in the vignettes below. On its own, this notion of centralised power does help to explain how residual structures and processes in government and academia impact on, and work against, self-determination of Aboriginal peoples in Australia. However drawing wholly on this single and traditional conception of power to explain every event and circumstance affecting the learning and work of Indigenous practitioners fails to take account of the truly dynamic, complex and dispersed relations of power at play in both settings. Weber's conception of power alone would not, for example, help to explain the shifts that have occurred over the past four years in policy and environmental health program delivery at State and National level (see Brown, Nicholson and Stephenson, forthcoming). These outcomes have put Indigenous environmental health onto the mainstream policy and planning agendas for the first time. They clearly demonstrate the ability of a critical mass of Indigenous practitioners (in concert with their non-Indigenous allies) to win more control over their community's future health and well-being and their own professional lives. Understanding of this alternative and multi-dimensional, dynamic and dispersed conception of power comes out of the debate on post modernity (Newman, 1995, p. 254), centring on Foucault's investigations into the local and specific relations of power. For Foucault:

Power is everywhere; not because it embraces everything but because it comes from everywhere... Power comes from below; that is there is no binary and all-encompassing opposition between ruler and ruled at the root of power relations... One must suppose rather that the manifold relations of force that take shape and come into play in the machinery of production, in families, limited groups and institutions, are the basis for wide-ranging effects of cleavage that run through the social body as a whole (Foucault, 1979, p. 93-4).

Under this conceptualisation, Foucault identifies power as:

...dispersed and expressed in a myriad of locations, events, relations and groupings of people, rather than being centrally located in a large structures' (Newman, 1995, p. 254).

With his interests in social action and education, Newman argues that a decentred notion of power is useful in restoring confidence in local effort and local struggle, but cautions against dismissing centralised power an illusion. This would appear to hold

true in my own research. In the context of Indigenous students, the traditional Weberian notions of power that come out of modernity still seem to apply. For these students power does not focus solely on either the central or the local sites of power, rather it straddles both, requiring investigation into the relations between the two and how power relations are constructed or played out in particular situations. In the Indigenous situation there are, for example, some centralised structural concerns that play an enormously important part in continuing the colonial relationship of the State over Aboriginal people (i.e. refusing to give real control to Aboriginal communities). Within that there are specific events, actions, policies and thinkings that occur in particular situations which are more usefully considered using a Foucauldian understanding of power relations. The following vignettes illustrate more typical situations confronting students. Pseudonyms are used in each case.

Vignette 1

‘Stay away, it’s not your problem...’ - On-the-job experiences.

Clem is an Aboriginal environmental health practitioner working for a State government health unit that services an area of rural and remote Australia. In an interview, he explained how important family ties were to gaining access to some communities. But there were also times where family connections did not help. An example he gave relates to a white manager of a large Community Corporation prohibiting Clem access to work on the very communities where he once lived and worked. These communities fall under Corporation control and exhibit some of the most appalling living conditions in the country. Yet local elders maintain historical loyalties to the remote manager, in spite of his apparent lack of regard for their well-being. With the manager residing hundreds of kilometres from the communities, the elders call Clem directly when they require urgent assistance. He conducts all his work in these communities against the wishes and without the consent of the manager. In order that they keep the peace with the manager and receive the assistance they need from Clem, the elders make sure word of this arrangement never gets back to the corporation manager.

Vignette 2

‘EHO first, Aboriginal second...’ - the employer.

During interviews, a number of supervisors stressed the importance of Indigenous trainees obtaining broad-based and mainstream field experience, rather than dealing explicitly with the environmental health issues of Indigenous communities. Students sensed they were seen by their employers as ‘EHO Trainee first, Aboriginal second’. This was particularly troubling for trainees who had been recruited from community. One student, Sharon, explained how she understood the importance of gaining

qualifications and experience that were professionally recognised. But she also felt mainstream professional training needed to occur *alongside* an increased involvement in community-based projects. She questioned whether the workplace was prepared or indeed capable of orientating her professional training that way. With her strong social and cultural connections to a local Aboriginal community, Sharon knew that her people would see her as ‘Aboriginal first’. She knew that they would expect her to take up their issues, no matter how junior or inexperienced she was in the organisation. In her junior role Sharon found this position difficult to negotiate, both with her employer and her community.

Vignette 3

‘Special students doing a special course...’ – the profession.

Gavin had worked for a number of years in community environmental health work before coming to the campus for a pre-enrolment course orientation. During his years as a community practitioner he had worked under a number of non-Indigenous environmental health officers and had found many did not credit him with his experience. He wanted to join the degree program to upgrade his qualifications to full professional level, so that his views would carry at least as much weight as the next officer’s. The closer Gavin came to joining the program, the more he heard from those in the profession around him that the Hawkesbury Indigenous program was a ‘special’ Indigenous program, and so weaker than a ‘proper’ professional training program. They cautioned him that his future eligibility as a fully accredited EHO was in jeopardy. Other practitioners at the orientation session added that workplace colleagues had given them the same impression. Supervisors, peers, other non-Indigenous trainees and academics from other educational institutions had each been responsible for disseminating false and misleading information to prospective students.

These vignettes present important situations underlined by power and reinforce the complexity of the problem. An analysis of each passage may be undertaken using both Weberian and Foucauldian conceptions of power. The former would reveal institutional notions of power while the latter would explore systems of power and reciprocal relationship. In the first vignette for example, the manager governed the community purse strings from afar and in so doing maintained considerable power and control *over* the health and well-being of its residents. By capitalising on an historical allegiance from community elders, the manager was able to assume an authoritarian and paternalistic form of governance. The State assisted in the perpetuation of his domination by continuing to fund improvement programs through the manager, knowing full well that little or no change occurred in the communities. Community elders who regretted handing over such control found that attempts to re-claim some powers for community management met with reprisals. This illustrates how the power

and authority vested in the white manager by funding agencies reinforced and maintained the traditional Weberian notion of power over those in community. In a similar way, traditional Weberian interpretations of domination and *power over* the 'weak' Indigenous environmental health trainees can be extracted from each of the other vignettes.

A Foucauldian reading of Clem's work practices however identifies all the players in this situation - the community manager, funding agencies, community elders and Clem, the student - as parts of a more complex system of power relationships. Because the elders found it difficult to tackle the manager head on they adopted instead more of a round-about way of having their most pressing needs met. Clem became a major player in this exercise by convincing his employer that direct assistance needed to be provided to the community. By keeping this arrangement from the corporation manager, Clem, the elders and the health agency shared in the decentring of power under Foucauldian terms. This kind of postmodern analysis of power may also be undertaken on the other passages, focusing instead on how students actively engaged in a plurality of action and dialogue and contributed to the decentring and re-negotiation of power in the profession, in their workplaces, in community projects and in the University curriculum. Instead of accepting a simple structure of domination, Foucault explored:

...ways in which individuals participated in multiple institutional practices which positioned them differently in different relations of power or subordination (Lee and Wickert, 1995, p. 136).

As previously established, many environmental health problems are complex (Ireland, 1981; Miller, 1985; Anderson, 1987; Kreisel, 1990; and Gist, 1992) even without consideration to issues of power. Professionals working in such a multidisciplinary field need to understand their work from much more than a broad technical perspective. As can be seen from the above vignettes, problems of a 'wicked', real, contextualised, and contested nature are as much located in relations of power as they are in any particular field of professional knowledge. Indigenous environmental health practitioners therefore require an increased understanding of the many forms and uses of power and how power stands as something constantly requiring negotiation. Furthermore, different ways of understanding power may help students re-define for

themselves how they see workplace and practice-based relationships and how they may be able to evolve in them.

This research does not argue for one conception of power over the other. Instead it supports the concept of folding modern Weberian notions of power into contemporary conceptions of power relations brought to the fore by Michel Foucault. Both are very powerful concepts in themselves and equally important.

Power is manifest in centralised structures, pervasive hegemonic ideologies, and organised movements, *as well as* in a vast, decentralised array of organisations, relationships, and events...(Newman, 1994, p. 137).

Newman adds that educators need to help students analyse the use of power in all these contexts and all these forms. Until this analysis of power relationships impacting on the practice of Indigenous environmental health practitioners, there had been little effort to look at how and where in the environmental health curriculum concepts of power were dealt with. It is now clear that students were only ever required to undertake the most cursory of analyses of social and political dimensions to professional practice and community problems. This in turn raises concerns over the ability of the University of Western Sydney problem-based core curriculum to adequately address the ‘real-world’ elements that impact on the working situations of Indigenous students. The following chapter puts forward strategies for dealing with these concerns.

CHAPTER SEVEN – EASING THE BIND, EASING THE BURDEN

7.1 Indigenous Practitioners and the Curriculum

Re-casting Problem-based Learning

This research has established that Indigenous environmental health student-practitioners face the kinds of complex, contextual, convergent, and contested problems that Schön (1991) refers to as ‘messy and confusing’; Miller (1985) as ‘wicked’; and Pascale (1990) as ‘divergent’. I suspect these writers did not dwell on cases of practice other

than those of the mainstream professional when devising these descriptors, and therefore had not specifically accounted for the significantly amplified political nature of cross-cultural professional practice. Nevertheless, the descriptors are adequate for summing up the challenge to Indigenous professional education which, as McClay (1988 as cited in Byrnes, 1993, p. 157) points out, can be an endeavour that serves Indigenous people, or one which seeks to control and dominate them.

The findings of this review of the experiences of Indigenous students in the University of Western Sydney's core environmental health curriculum revealed the following:

1. Indigenous learners appreciated elements of the core curriculum but expected to be able to understand and respond to set problems using much wider frameworks than the existing model provided.
2. Indigenous learners valued being part of the development of a wider workforce and social movement, but found that the core curriculum did not enable them to fully take advantage of this.
3. The core curriculum gave little assistance to Indigenous learners in dealing with the conflict they experienced when thinking and writing about their preferred future roles in community and government.
4. Indigenous participants felt problem-solving exercises (and the methods and assessments processes used) aimed at producing 'sameness' amongst its participants – Indigenous and non-Indigenous alike – and that this sameness privileged the norms, views, approaches and structures of the dominant society.
5. The problem-solving models of the core curriculum were not applied robustly enough by staff to enable Indigenous learners to contextualise their own problems of practice within broader social, political and historical analyses.

Problem-based learning had always been viewed by environmental health teaching staff at University of Western Sydney as a means of unleashing student participants from the shackles of conventional 'banking' forms of education. Whilst staff now admit this assessment was founded on an 'intuitive' and 'theory free' approach to teaching, it remains consistent with much of the adult education literature in the field. Problem-based learning can open up new possibilities for effective student learning (see Boud and Feletti, 1997; Engel, 1997; and Margetson, 1997), and its processes can develop

skilled lifelong learners, equipped to work in a rapidly changing world (see Cross, 1982; Candy, 1991; and Woods, 1994). Yet for the group of non-traditional learners involved in this research, problem-based learning core subjects provided professional skills of only limited value. The sorts of daily workplace problems experienced by Indigenous practitioners required a different approach to teaching and learning. This meant a different construction of the problem was necessary. A more meaningful problem construction would move away from one that relied on individual interpretation of *possible work problems* (or scenarios), to one that took account of the social and cultural interpretations and implications of *messy, real-life problems*. Presented with these findings, the original designer and long-time teacher of the University of Western Sydney degree, had this to say:

One thing that I have realised is that ‘grounding’ is the key. The problem has got to be grounded in real life, with real people with real places... Learning has got to relate to real people in real places, not some artifact, some abstract concept, some set of literature or what ever. It has got to be about real people in real places. So for them [sic], the real people and places are their communities, not something somewhere in the Hawkesbury valley.

Never mind offering them [sic] abstractions or hypotheticals. Anytime that I have ever worked with an abstraction or a hypothetical, trying to work in at this level, it’s vacuous. I just have this empty sense that this is not connecting. So much of what happens in education, commerce and government is all up there, dealing with the abstractions and hypotheticals... It doesn’t work (ROI # 26).

Core subjects of the University of Western Sydney environmental health curriculum therefore need to be reconsidered and re-oriented so that practice-based learning is central to the core professional practice program. As one student put it:

The course does not teach us how to deal with some things. Like if we as trainees are put into government positions, do we all stand up for what we believe in or do we just go ahead and do what the people we work for want we to do? And if we are going to stand up for what we believe in or what we think that the community wants, then how do we push that point across to the people we work with (ROI #10).

Such a shift would provide Indigenous practitioners with much needed and different skills from those developed in a typical interpretive problem-based and experiential educational program. Changes to core curriculum will require more than a simple

broadening of the types of problems under investigation. It will require the adoption of an approach to learning that:

- i) positions the inquiry within its social and historical context;
- ii) is action-oriented; and
- iii) extends into the trialing and evaluation of interventions.

Utilising the Workplace

As Solomon (1999, p. 128) asserts, learning in a culturally diverse workplace should provide a space for learners to engage with the political and social context of work and the complexities around working with difference. Educational techniques to assist Indigenous environmental health learners to get at these sorts of issues could include action research (see Elliot, 1991; Ford *et al.*, 1993; and Barnett and Abbatt, 1994), problem posing (see Freire, 1970 and Wallerstein, 1983) and some accounts of the workplace learning (see Butler, 1999 and Foley, 2001).

Utilising learners' own experiences and relationships at work, and allowing participants to identify and select issues of their professional practice as the locus for learning, should not be confused with current discussion on 'workplace learning'. As mentioned earlier in this thesis, the workplace learning literature capitalises on this latest adaptation of professional education. Its critics claim this approach to learning takes little account of 'human capital theory', and therefore it aids and abets the view of education as a means of increasing the net worth of the workers' skills and abilities for the benefit of the organisation (Marsick and Watkins, 1990, p. 205). For organisations concerned with returns on investment, this tends to locate workplace learning in a cost-to-benefit equation. Some writers deal cautiously with the political and social equity dilemmas of workplace learning, preferring instead to keep such problems at a safe distance. The following excerpt highlights this tendency:

A single-minded emphasis on learning *for* work can blind us to the unintended consequence for significant groups in the workforce and those not in work. This is not just an issue of social equity, important though that is, but it can rebound on the very goals of work itself. For example, assumptions about the aspirations of the work patterns and learning needs of full-time predominantly male workers cannot necessarily be transferred to other groups such as part-time staff, women and members of non-dominant cultural groups (Boud and Garrick, 1999, p. 5).

Others are more direct. Hart (1993, p. 26) for instance contends that a human capital approach to learning in the workplace tends to create employees who are economically active, but politically passive. Such an approach is clearly dangerous for Indigenous participants in that limited conceptualisations of workplace learning are not rigorous enough to deal with the sorts of issues Indigenous learners of this study have raised.

This research shows that the way learners formulate, investigate and then treat learning problems can be influenced by one of three different views of the world. Within any one of these approaches, stakeholders will take up certain social and philosophical positions. If workplace learning does not overtly commit to a social and political purpose, then it cannot take us any closer to tackling the real learning needs of Indigenous practitioners than problem-based learning could before it. Discussions of the social purpose of learning, social equity, critical education and self-determination are more useful initiators of learning for Indigenous participants, and fits within Newman's (1994) notion of social action through adult education. He defines adult education in social action as:

...a collective activity in which a group of people brought together by a shared history, a shared social class, a shared neighbourhood, a shared interest or a common membership of an organisation, join together to learn and act on their social political, cultural and economic environment in order to gain more control over their own lives (Newman, 1994, p. 247).

This activity has an important association with critical pedagogies because it is concerned with more than giving the disadvantaged in society access to existing social structures. It is about people altering the social structures and gaining more control over how these social structures are formed.

The Role of Teachers

If learning and the environmental health curriculum are to be located firmly within discussions and debates of social action, then critical inquiry and critical pedagogies become central to educational experiences.

By examining curriculum knowledge as a social product and situating it as part of broader social and historical conditions it is possible to illuminate

whose knowledge is favoured, and to ascertain whether that knowledge legitimates the prerogatives of certain groups at the expense of others (Singh, 1990, p. 16).

For the core curriculum to deliver changes of this nature, teaching staff will need to develop a deeper conception of critical approaches to problem-based learning. Teaching staff will need to adjust their own teaching and learning frameworks and pedagogical practices to match this new orientation and in so doing be vigilant against adopting only the rhetoric of a new approach (see Argyris and Schön, 1980). The approach to core curriculum teaching will need to shift from one that develops students' understanding of problems and possible context-based solutions *through guidance*, to one that challenges participants to evaluate practices and policies, expose situations and put forward options for change *through dialogue and critical engagement*.

Freire's problem-posing techniques approach education in this way. So too do Foley's (1995a) accounts of the work of 'real teachers' like Myles Horton, who for decades worked with trade unionists, civil right workers and environmental activists in the United States; and David Head, an educator of homeless and working-class people in London in the 1970s (Foley, 1995a, pp 48-52). These sorts of educator think and act strategically and with purpose and commitment. They would deliver the kind of useful outcomes that O'Brien and Callow (1992) and later, Weir (unpublished), omitted from their summary of unhelpful lecturer types (see Table 1 in Chapter Two). Focusing on learning in social action, these teachers see themselves as resource personnel for learners, to work 'in solidarity' with learners, to challenge and extend them, but never to patronise or control them (Foley, 1995a, p. 50). For the social benefit of Indigenous education to be felt in their communities, Indigenous learners will need to be supported by educational approaches that go beyond simply defining the extent of the problem. This research advocates for a shift in teaching and learning objectives so as to support Indigenous environmental health practitioners engage in locally based social action projects and change-evaluation studies. It advocates providing learning activities that place the problems and practice of community environmental health workers and their regional coordinators at the centre of the inquiry. As the following section will demonstrate, policies, practices and programs already exist within the working domain

of the first Indigenous environmental health cohort upon which this type of collaborative learning could be effectively based.

7.2 Indigenous Practitioners and Professional Practice

There is little argument today among policy makers, program managers and service providers that Indigenous environmental health is a crucial area for long-term support if sustained improvements are to be seen in Aboriginal and Torres Strait Islander Communities (Stephenson, 1999b, p. 15). Supportive measures need constant review, re-development and/or reinforcement if Indigenous peoples themselves are to be empowered to bring about and maintain these improvements.

Since this research commenced in 1997, some advances have been made in Indigenous environmental health. A number of elements of support for Indigenous environmental health practitioners are in place (see Table 6 below). These advances have focused primarily on building the capacity of the Indigenous workforce.

How effective this workforce development approach is to improving the living conditions and wellbeing of Indigenous populations in the future is yet to be determined. In that sense, this support can only be seen as the first small steps in a long-term development of Indigenous environmental health, for as improved processes and structures bed down at community, government and education-provider level, new challenges and issues will emerge.

One such challenge is to expose and then find ways to relieve the burden of the complex and power-laden reality of Indigenous environmental health professional practice. The extent and nature of this burden, as it emerged in the research, is summarised below:

1. Indigenous practitioners valued being a part of a workforce development movement but believed many features of their professional training to be poorly conceived and badly managed, raising questions about motives of those involved.

2. Indigenous practitioners saw benefit for themselves, and their communities, in pursuing the training, but struggled at times to reconcile ‘white fella’ training and practice with their cultural norms and obligations.

Year	Activity/Report	Key Support Agencies
1997 (Mar)	Indigenous students commence a nationally accredited distance education environmental health degree	UWS with funding from ATSIIC, OATSIS and RHSET
1997 (Sept)	First National Consultation of Indigenous practitioners, Alice Springs, Northern Territory	UWS and NEHSSC
1998 (May)	First National Indigenous Environmental Health Workshop, Cairns, Queensland.	NEHF and AIEH
1998 (Sept)	Draft National Environmental Health Strategy released	NPHP and NEHF
1999 (May)	Second National Indigenous Environmental Health Workshop, Broome, Western Australia	NEHF, AIEH and CHAC
1999	Completed National Environmental Health Strategy published	EnHealth Council
1999 (Dec)	Murdi Pakki Region Aboriginal Housing and Infrastructure Implementation Manual released	ATSIIC and MPRC
2000 (Mar)	Code of Practice released for Housing and Environmental Infrastructure in Aboriginal Communities in WA	EHNCC and consultants
2000	National Environmental Health Strategy Implementation Plan released	EnHealth Council
2000	National Indigenous Environmental Health Forum (NIEHF) established	EnHealth Council and CHAC
2000 (Nov)	Third National Indigenous Environmental Health Conference, Alice Springs, NT	NIEHF sponsored by en-Health Council and AIEH
2000 (Nov)	First Indigenous graduate of a professional environmental health program	UWS
2001	National Project to map environmental health services and gaps to Indigenous communities	CHAC and enHealth Council
2001	National Indigenous Environmental Health Workforce Development Program	UWS with funding from ATSIIC and CHAC

Table 6: Charting Indigenous environmental health support projects

3. Indigenous practitioners wanted to act as brokers of information across cultures but were cautious of employers’ attempts to use their relationships with communities in ways that were insincere or risked compromising their own cultural identity.

4. The rhetoric of working in partnership with Aboriginal and Torres Strait Islander communities was strong among many employing agencies, however Indigenous practitioners questioned the reality of this rhetoric
5. Indigenous practitioners working in mainstream environmental health agencies were constantly exposed to relations of power that both inhibited and worked for their programs in Indigenous communities environmental health.

The future practice of Indigenous environmental health is likely to continue to confront non-standard situations from a mainstream practice perspective. These will be situations that fall outside textbook examples. They will be situations not previously experienced or fully understood by non-Indigenous colleagues and professional mentors. Consequently Indigenous practitioners will require skills to look closely at, and contest, the conventional and dominant policies, practices and structures of government, the very systems of governance that have inadequately served the needs of Indigenous populations in the past.

As emerging professionals, Indigenous environmental health practitioners will also require skills to deal with non-Indigenous ‘experts’ who benefit mostly from keeping them down. Indigenous environmental health practitioners will need to develop their own professional standing and problem-solving approaches so that their work in community can transcend the scrutiny of the traditional power brokers in environment and health practice. In carving out this new professional space and establishing new norms of practice, Indigenous practitioners will need to negotiate and legitimise alternative approaches to working with their communities. The data from this research has revealed that both traditional and contemporary forms of power operate within the State to hinder Indigenous practitioners establishing new and meaningful working relationships with their client group (Indigenous populations across a range of urban, rural and remote settings). On the other hand, complex reciprocal relations of power also help Indigenous practitioners and their allies turn some of these inhibiting factors around.

Relationships between Indigenous and non-Indigenous professionals, Indigenous practitioners and community, and the State and community are key to the way power

relations are played out in this case. Ozar (1993) sees any relationship between professional and client to be value-based, with the opportunity for professionals to take on an *interactive* association with their client group. By an interactive relationship, he refers to:

...[a relationship] in which both parties have unique and irreplaceable contributions to make in the decision-making process, with the professional offering expertise to help meet the client's needs, as well as a commitment to the professions central values, and the client bringing his or her own values and priorities and the value of self-determination, the ideal being that the two parties choose together how the professional shall benefit the client (Ozar, 1993, p. 167).

This challenge is not new to most contemporary professional education and practice discourse. It applies as much to the education and practice of those in 'helping professions' (nursing, social work, teaching), as it does to those in 'entrepreneurial professions' (journalism, business, law), and those in 'technical professions' (architecture, engineering and military) (Curry and Wergin, 1993a, p. xiii). The work of many environmental health professionals in mainstream practice requires establishing and operating in an interactive relationship with their communities on a daily basis. In a recent review of the planning and regulatory frameworks guiding environmental health practice, Brown *et al.* (2001) identified a range of organisational, regulatory and workplace barriers to the effective establishment by government agencies of such a relationship with community. With activists in communities constantly crying foul over the level of commitment governments give to processes of community engagement, and government agents frustrated over the lack of representative community involvement in government-initiated stakeholder consultations, it is little wonder that Ozar's challenge for an interactive relationship is fraught with difficulties in most government-community interactions.

A long history of negative interactions between Indigenous populations and the Australian State amplifies the complexity of creating and maintaining interactive relationships between government and Indigenous communities. For Indigenous environmental health practitioners in government who aim to shift government relationships with community into the interactive zone, the challenge is equally

significant, if not more so. These practitioners will need to learn ways of working with community that carry the full benefit of an interactive approach.

7.3 The Profession

Importantly, this learning cannot be all one-way. The profound and at times acute needs of Indigenous communities extends this challenge to a host of other government, community and industry players (Indigenous and non-Indigenous alike), and to the environmental health profession as a whole. Together, they will need to explore new ways of working with an entire section of the Australian population looking for a more effective relationship with the State. Evidence of success will be meaningful and sustainable change and measurable improvements to the health and well-being of Aboriginal and Torres Strait Islander people throughout the country.

Non-Indigenous environmental health professionals especially will need to reflect upon their own work practices and shift their thinking on this issue. This may take time in a profession where mainstream versions of factual knowledge, process knowledge, tacit knowledge, theoretical principles, action understanding and communicative competence (Barnett, 1999, p. 30) are so entrenched. Effective action in communities will require the environmental health profession to bring a different worldview and stronger social purpose and commitment to Indigenous communities, environmental health problem-solving. If this is not clearly understood by non-Indigenous professionals, then all the ingredients are present for a confrontation that could undermine Indigenous practitioner confidence:

Typically, white community workers and bureaucrats, increasingly constrained by the need to demonstrate the effectiveness of their programs, see community work as being about developing services and providing assistance to individuals and groups in need. On the other hand, many Aboriginal community workers see community work as being more than the provision of services and the practicing of helping techniques. For these people community work is an activity which has clear social purpose and content, which in the Aboriginal context, means connecting community work to their people's struggle for economic, political and cultural self-determination (Foley and Flowers, 1992, p. 65).

In the early 1970's Schein challenged Western professionals to place a higher value on working for the poor and the powerless. He urged those with privileged professional knowledge to challenge some of the norms within their own professions and to take on stronger advocacy roles for improving society, rather than merely serving it (Schein, 1972, p, 3). This call remains as relevant, if not more so, to the professions of today. In the context of this investigation into the experiences of a first Indigenous Australian cohort to enter the environmental health profession, it re-ignites a call for appropriate action for, with, and on behalf of Aboriginal and Torres Strait Islander communities.

7.4 The Next Step

The Curriculum

The findings from the accounts of student experiences in the two domains of academia and professional practice combine to suggest that a wider educational framework needs to be developed in the education and training of Indigenous students in the University of Western Sydney environmental health degree, and potentially elsewhere. Such a framework will need to be supported by a reconceptualisation of problem-based learning in which both *critical* and *strategic* perspectives are embedded into problem-posing exercises or other pedagogical techniques.

The nature and purpose of student inquiry is of central concern to critical education programs. For critical pedagogy to be effective in this instance, Indigenous environmental health participants of the program must firstly be ideologically committed to redressing asymmetrical relations of power that result in the continued threat of disadvantage to Indigenous peoples. They will need to accept that: -

1. educational and work activities are *historically located*;
2. education and professional practice is a *social activity* with social consequence;
3. education and work is intrinsically *political*; and
4. every education act and every professional encounter is deeply *problematic* (Carr and Kemmis, 1986, p. 39).

Accordingly, ideologically committed Indigenous participants of a critical problem-based curriculum will need to understand their purpose in study and in work differently from that of mainstream problem-based learning students. Furthermore, they will need the skills to work to respond to problems of the workplace and of their practice, as they arise. For this reason, a future Indigenous environmental health professional curriculum needs to develop 'strategic qualities' in its participants. This term is new to this thesis. A strategic approach to the future curriculum would be concerned with thoughtful and sustainable responses to problems, not just the careful and detailed description of its social, political and historical dimensions. Carr and Kemmis (1986, p. 40), for example view pedagogical practice as strategic where a teacher or other professional routinely:

...submits some or all of his or her work...to systematic examination [and] plans thoroughly, acts deliberately, observes the consequences of action systematically, and reflects critically on the situational constraints and practical potential of the strategic action being considered.

Problem-based inquiry of a strategic nature therefore needs to develop in learners the ability firstly to *act* on situations, and secondly, to *reflect* on their actions in a systematic, self-conscious and reflexive way. A *critical and strategic* conceptualisation of problem-based learning for Indigenous environmental health professional education at University of Western Sydney is beginning to emerge. Furthermore, pedagogies more appropriate to the learning circumstance and objectives of socially committed Indigenous practitioners are becoming clearer, as are the sorts of measures required to enable teaching staff to operate effectively within a new educational paradigm.

Investing in, and giving on-going support to, the development of Indigenous environmental health practitioners, are both vital and logical steps if Indigenous peoples of this country are to be empowered to take greater control over their lives, and if they are to improve the living conditions and health of their own communities. An essential component of such strategies is to develop in Indigenous practitioners the skills to produce something more than accurate accounts of the nature and extent of problems facing their communities. A re-focused core curriculum would place the problems and practice of community environmental health practitioners and government trainees at the heart of their education. Understanding the many forms and uses of power working for and against the progress of Indigenous environmental health programs would

become central to the way problems of practice are analysed in the core curriculum. This approach would respond to the following need identified by students.

...if you go into the placing students in government organisations then really there should be some kind of subject that...more or less assists the student in dealing with the situations we experience (ROI #10).

Foucault's ideas about working with power become important to the way teachers work with students in a critical problem-based curriculum. His approach to teaching was to critically engage with students on issues of their work in ways that exposed:

...the *political and strategic nature* of those ensembles of knowledge previously thought to be either relatively independent of power...or...linked only in a vague or inadequate way to political institutions (McHoul and Grace, 1997, p. 60, emphasis added).

Rather than abandoning power to students, teaching staff of a future University of Western Sydney environmental health professional curriculum will need to use their power to create learning situations in which Indigenous participants can themselves exercise power. For future cohorts of Indigenous undergraduate students remaining in their communities while undertaking a distance professional environmental health degree, the options for focusing this type of learning approach are numerous. The capacity of ideologically committed Indigenous learners to bring about change through social action, will be as much a test for them, as it will be for the revised curriculum and its teachers' abilities.

The Profession and its Practitioners

Through a critical problem-based learning core curriculum, Indigenous students and teaching staff at University of Western Sydney can combine with workplace colleagues to improve on what is currently a rather ill-defined professional interface. Indigenous learners cannot create new ways of working with communities in isolation or without the support of government policies and programs. They will also require continual encouragement and support from workplace peers and managers. This should not be seen as a 'both-ways' approach, in which the student must act out two different roles - that of an Indigenous person and a mainstream professional - but rather as a third approach, one which is yet to be defined. In helping to define it, non-Indigenous

environmental health practitioners will need to engage in critical reflection – personally and professionally – in order to:-

- **Over-come fear:** Professional practice that involves working with the environmental health issues of Indigenous peoples may invoke a fear of the unknown. Entering into such work has potential to take some practitioners out of their comfort zone. They run the risk of having to personally account for, or feel guilt over, their own histories of poor performance or professional maltreatment to Indigenous populations. Others may simply feel poorly equipped and professionally inadequate to work in such a complex and often contested area of practice. They may suffer from a fear of being exposed.
- **Give space to Indigenous practitioners:** Indigenous practitioners require personal and professional space to trial new ways of operating. If improvements in the living conditions of Indigenous populations are to take hold and be sustained, new ways of operating will be required. White, Western knowledge will assist Indigenous practitioners understand the gravity of the problem from a conventional perspective, but the task of securing improvement will also require a way of working that most non-Indigenous practitioners could never hope to come close to understanding.
- **Share power:** Supervisors and directors with only limited understandings of the needs and proposals of their Indigenous colleagues will need to relinquish traditional power and control in order to support Aboriginal and Torres Strait Islander practitioner initiatives. Allowing Indigenous practitioners to set the agenda and identify mechanisms for improvement is just one important element of support. In honouring their commitment to empowering Indigenous practitioners, senior managers and policy makers will also need to act in ways that are consistent with their personal and organisational rhetoric.
- **Learn together:** In each of the above cases, supervisors, directors and other non-Indigenous practitioners will need to work openly with their Indigenous colleagues so that mutual learning is seen as an integral part of Indigenous environmental health problem-solving. Indigenous and non-Indigenous practitioners alike will

need to keep an open mind on strategies and actions, and be prepared to teach, and to be taught by, each other.

- **Value cultural diversity:** For this learning to be effective, and for it to avoid perpetuating unhelpful stereotypes in the workplace, understandings of Indigenous Australian culture must reject any notion of homogeneity within the groupings of Indigenous environmental health students. Mainstream environmental health practitioners need to take care when dealing with Indigenous practitioners and their communities in order that Indigenous cultural practices ‘are not seen as static or fixed or single ways of being’ (Solomon, 1999, p. 127).
- **Smooth the way:** Environmental health practitioners in positions of influence will need to take a pro-active role in Indigenous environmental health matters and must inculcate the same sense of collaboration and learning in their junior staff. Indigenous practitioners will be looking to senior staff not only to accept responsibility for Indigenous environmental health development, but also to work with them in setting the pathway for the future.

If the variety of recent initiatives in support of Indigenous environmental health policy and practice continue to gain momentum, and there is every indication that they will, then meeting this challenge will form a part of the future practice of every environmental health professional in the country.

Concluding Remark

This research has confirmed that Indigenous practitioners who work within mainstream structures and who strive to improve the health and living conditions in Indigenous communities, need to be aware of, and be able to negotiate, both the dominant organisational structures *and* the intricate relations of power they are a part of. In this regard, Aboriginal and Torres Strait Islander students entering the field of environmental health have much to contend with, notwithstanding the recent surge in support for the development of a professional workforce of Indigenous practitioners in this field.

The findings of this inquiry reveal that Indigenous students need to understand the use of power, how power is contested, and how power may be re-formed to change their situation, whether they are negotiating community or factional politics in their work roles, countering workplace prejudices and organisational obstacles, or exercising the right to academic freedom in their University studies. Working purposefully with Indigenous colleagues in this way, environmental health teaching staff at University of Western Sydney and their workplace training counterparts can create the educational, organisational, political, and social climate for positive change to occur in the long under emphasised field of Indigenous environmental health.

Appendix 1: Education and Work Backgrounds of Participants

Activity	Year												Total			
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008				
Course evaluation:																
Student Consultation																
Phone/Email/Text																
On-Campus Meetings																
Stakeholder Liaison																
Employers																
Individual Staff																
Staff/Student Focus Group																
Specialist Tutors																
Indigenous Education Unit																
Advisory Committee																
Evaluation:																
Student Performance																
Literature Review																
External Evaluation																
Workplace evaluation:																
Field Visits:																
Students in Placement																
Potential Employers																
EHW Training providers																
Indigenous Case Review																
Indigenous Forums:																
National Conferences																
Regional EHW Workshop																
National Education Committee																
Local Government Network																
Health & Education Funding																
National & State Conferences																
National Workforce Forum																
Presentation of Findings																
Report to ATSI/RHSET																
Workshops and Conferences																
Invited Workforce Forums																
Thesis development:																
Proposal Development																
Consultation with Advisors																
UTS Supervisor																
UWS Advisors																
Present Findings																
Doctoral Seminar Paper																
UWS PhD Presentations																
Writing																
1st Draft																
2nd Draft																
3rd Draft																
Pathway to Course																
Direct (Trainee EHO)																
Denotification																
Career Change																
Personal Interest																
State Health																
Local Authority																
Community Council																
Community Agency																
Other Government																
Other/Unemployed																
School less than Year 10																
School Year 10																
High School Certificate																
General TAFE awards																
EH TAFE Certificate																
EH TAFE Diploma																
Tertiary Prep Course																
Indigenous Studies																
University Degree																
Community EHW																
Regional EHW																
Community Health Work																
Trained Technical Work																
Armed Forces/Police																
Various Para-professional																
Various Unskilled																
No Work History																

Appendix 1:
Course evaluation:
 Student Consultation
 Phone/Email/Text
 On-Campus Meetings
 Stakeholder Liaison
 Employers
 Individual Staff
 Staff/Student Focus Group
 Specialist Tutors
 Indigenous Education Unit
 Advisory Committee
 Evaluation:
 Student Performance
 Literature Review
 External Evaluation

Workplace evaluation:
 Field Visits:
 Students in Placement
 Potential Employers
 EHW Training providers
 Indigenous Case Review

Thesis development:
 Proposal Development
 Consultation with Advisors
 UTS Supervisor
 UWS Advisors
 Present Findings
 Doctoral Seminar Paper
 UWS PhD Presentations
 Writing
 1st Draft
 2nd Draft
 3rd Draft

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